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THE EFFECT OF NEOMYCIN IN B. PROTEUS CYSTITIS COMPLICATING TUBERCULOUS MENINGITIS

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Retention of urine associated with tuberculous meningitis is very uncommon in children, and when there is an added complication of *B. proteus* cystitis these conditions together present a serious medical problem. We can find no record in the medical literature of a patient suffering from a combination of these infections, and the object of this report is to describe such a case.

Waisbren and Spink[1] described 17 cases of urinary infection due to *B. proteus*, which were favourably affected by neomycin and 7 patients with tuberculosis—5 of whom had meningeal involvement. These showed no beneficial response to neomycin, alone or in combination with other antimicrobial agents such as sulphadiazine, aureomycin, streptomycin, dihydrostreptomycin and Promizole. The authors concluded that although infections due to *B. proteus* were favourably affected by neomycin the ototoxic and nephrotoxic effect of this drug precluded its recommendation for general use.

Garfield *et al.*[2] listed 62 infections with organisms sensitive to neomycin and completely or partially resistant to other antibiotics. Amongst these is mentioned one case of cystitis due to *B. proteus*, but details of this case are not given. One of the 10 cases described in detail had a urinary infection from which a mixed growth of proteus, pseudomonas and non-haemolytic streptococci was obtained. In this case only the proteus was eliminated by neomycin.

Kadison *et al.*[3] listed the organisms against which neomycin was found to be active. They mention that neomycin, in acting on *B. proteus*, differs from the polymyxins.

CASE REPORT

M.M., a Bantu girl aged 7 years, was admitted to the McCord Zulu Hospital on 23 January 1956 complaining of severe cough, headache and abdominal pain. On examination she was found to be irritable and restless, with marked neck rigidity and positive Kernig's and Brudzinski's signs. The CSF was sent for examination on 3 occasions but each time arrived at the laboratory clotted. On 27 January a protein content of 3·8 g.% was found. X-ray of the lungs showed a right hilar flare and infiltration at the left base. The Mantoux test (1/1000) was positive. A diagnosis of tuberculous meningitis was made.

The following treatment was instituted at the McCord Zulu Hospital on 23 January: (1) Streptomycin, 0·5 g. twice daily by intramuscular injection, (2) procaine penicillin, 300,000 i.u. daily by intramuscular injection (discontinued on 4 February), and (3) INH 100 mg. three times a day.

On 29 January the patient developed retention of urine and required catheterization daily until a Foley's self-retaining catheter was inserted on 1 February. She was then also given Sulphatriad, 1 tablet 4-hourly. The meningitis remained unchanged; the CSF clotted as soon as it was obtained, and because of this she was put on ACTH, 0·5 c.c. daily, starting on 2 February. By 9 February she was less irritable.

On 2 March 1956 she was transferred to King George V Hospital.

On admission the child's weight was only 28½ lb. She was fully conscious but obviously meningitic, with neck stiffness, positive Kernig's sign and marked irritability. She still had retention of urine and arrived with the Foley's catheter *in situ*.

The CSF findings on admission were 83 cells per c.mm., all lymphocytes; increased globulin; protein 920 mg.%; chloride 696 mg.%; sugar 55 mg.%. The diagnosis of tuberculous meningitis was later confirmed by a positive biological test and a positive serum CSF bromide ratio of 0·94 (Hunter[4]).

A catheter specimen of urine showed: Albumin+, pus cells ++++, red blood cells +; reaction acid.

On culture the urine gave a mixed growth of Gram negative and Gram positive bacilli, which were not further identified but which were found to be sensitive to achromycin, chloromycetin and terramycin.

Treatment and Progress

1. For the tuberculous meningitis: 10 i.u. of ACTH powder was given 6-hourly by intramuscular injection until 27 July (i.e. 4½ months), and 50 mg. of INH 6-hourly, 5 gr. of potassium chloride four-hourly and additional vitamin B were given.

2. For the cystitis: one Gantrisin tablet 6-hourly, 5 gr. of potassium citrate 4-hourly and bladder wash-outs of potassium permanganate.

4 *March* (i.e. 2 days after admission). Urine was leaking from

around the catheter, which was therefore removed and 6-hourly catheterization instituted.

5 *March*. The patient began to pass urine into the bed. Catheterization was discontinued but bladder wash-outs were continued.

6 *March*. Catheter specimen of urine showed: Albumin trace, pus cells +++; reaction alkaline.

12 *March*. The culture report on a catheter specimen of urine was as follows: 'Culture gave growth of *B. proteus*, insensitive to penicillin, streptomycin, achromycin, chloromycetin, terramycin, ilotycin and aureomycin'.

15 *March*. A further catheter specimen of urine showed: Albumin trace, pus cells ++; reaction acid. Culture from the urine gave a growth of *B. proteus* with the same sensitivity results as the specimen of 12 March.

16 *March*. Some neomycin was supplied by Messrs. Upjohn. The *B. proteus* was tested against this antibiotic and found to be sensitive.

Two mice injected intraperitoneally with the *B. proteus* were dead the following morning.

17 *March*. Neomycin, 17 mg. in 5 ml. of distilled water was injected into the bladder daily for 3 days.

18 *March*. The patient passed urine into the bed-pan for first time. Gantrisin and pot. cit. were discontinued.

19 *March*. She also received 12·5 mg. of neomycin 6-hourly by intramuscular injection for 8 doses (which was all that was available).

20 *March*. Catheter specimen of urine was sterile after this very small dose of neomycin.

26 *March* 1956. A non-catheter specimen of urine showed no abnormality.

Progress of the Tuberculous meningitis. A steady improvement occurred except for a fluctuation of the lumbar protein in the presence of a completely normal cisternal CSF, probably due to local disorder in the spinal sub-arachnoid space. The patient is now perfectly normal in all other respects, but is still receiving treatment with INH in this hospital.

DISCUSSION

During the year 1956 there were 7 cases of urinary infection with *B. proteus* in King George V Hospital in a total of 2,306 patients admitted. All the proteus strains were sensitive to chloromycetin except the one isolated from the case here described.

The virulence of *B. proteus* to laboratory animals is variable.[5,6] The strain grown from this case was virulent, killing mice on intraperitoneal injection. It is therefore very doubtful if the present state of this patient would have been so satisfactory had the urinary infection not cleared up so quickly.

Nephrotoxic complications occur with neomycin[1] and it therefore appears advisable to limit its parenteral administration. It is excreted in the urine very quickly. Kadison *et al.*[3] found that 200 units of neomycin injected intravenously in man produced a concentration of 7 units per ml. in 2 hours and that the effective inhibitory dose was 1·05 units per ml. test medium. Where the organism is sensitive to neomycin a short parenteral course combined with topical therapy should be effective—as indeed it proved to be in our case.

SUMMARY AND CONCLUSION

A case of tuberculous meningitis with urinary retention complicated by a *B. proteus* cystitis is described. Neomycin was extremely effective in the small doses used.

We wish to thank Dr. B. A. Dormer for making this work possible, and Messrs. Upjohn for supplying the neomycin. We also wish to thank the Medical Superintendent of the McCord Zulu Hospital, Durban, for permission to use his records.

The bromide test was done by Mr. J. Myers working on a research project with a grant from the South African Red Cross Society in the C.S.I.R. Tuberculosis Research Unit attached to King George V Hospital.

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ASSOCIATION NEWS : VERENIGINGSNUUS

AFDELING KALAHARI : TAK WES-KAAPLAND

Die Stigtingsvergadering van die Afdeling Kalahari, Tak Wes-Kaapland, is om 4 nm. op 31 Augustus 1957 in die Gordoniahospitaal, Upington, gehou. Die Voorsitter van die Afdeling, dr. L. E. Krige, het die vergadering gelei, en 15 lede van die Afdeling was teenwoordig, asook prof. James Louw, prof. L. Eales, dr. P. J. M. Retief en dr. W. G. Schulze as gaste.

In sy referaat het dr. Schulze die onderwerp van beserings onder die volgende hoofde behandel: 1. Abdominaal met gepaardgaande behandelings, (*a*) onmiddellik, (*b*) spesiaal; 2. Borsbeserings, met gepaardgaande behandelings.

Dr. Eales het daarna aan die woord gekom en 'n verhandeling gelewer oor die opeenvolging van metaboliese veranderings by beserings. Hy het die belangrikste veranderings in elektroliete en die stikstof-balans bespreek, asook die toestand van akute buis-nekrose (‚lower nephron nephrosis') en die belangrikheid van die anatomiese en fisiologiese kenmerke van die nephroon-eenheid. Die lesing is opgevolg deur 'n prentvertoning en vrae wat dr. Eales beantwoord het.

Dr. Retief het 'n referaat gelewer oor nierbeserings. Hy het eerstens die patologiese anatomie bespreek, en daarna ‚toe- en ooopbeserings' met hul verskillende behandelings. Vrae is deur lede gestel en 'n interessante bespreking het gevolg.

Professor James Louw se onderwerp was die fisiese en geestelike trauma gedurende die swangerskap en puerperium, die voorkoming en behandeling van moederlike beserings, en liggaamlike en geestelike beserings by die baba. Die verhandeling is opgevolg deur vrae en antwoorde. Dr. F. Joubert het die sprekers en die lede bedank, en die vergadering het daarna verdaag.

'n Dinee, bygewoon deur altesaam 45 mense, is dieselfde aand in die Oranje Hotel op Upington gehou onder voorleiding van die Voorsitter, dr. Krige, en die Burgemeester van Upington, raadslid D. J. Josling en mev. Josling was teenwoordig. Die dinee is bygewoon deur al die dokters wat by die vergadering was, en hul vroue, asook deur die plaaslike tandartse en hul vroue. Dr. S. W. van der Merwe, die sekretaris van die Afdeling, was 'n baie suksesvolle seremoniemeester. Die Burgemeester het die heildronk ingestel op die Mediese Vereniging van Suid-Afrika, waarop die Voorsitter geantwoord het. Dr. Retief het die geskiedenis van die Tak Wes-Kaapland en sy Afdelings in 'n interessante toespraak bespreek. Professor James Louw het die heildronk op die dames ingestel, en dr. Eales en dr. Schulze het die Afdeling namens die gaste bedank.

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EDITORIAL

ATARACTICS IN NEUROSIS

The recent tests carried out by a team of workers from the Department of Psychiatry at St. George's Hospital, London, merit careful consideration.[1] This group undertook to study the effects of various tranquillizers as subjectively felt by the patients and the experiments were carried out with great care so as to ensure that neither the patients nor their physician were aware of what drugs were being used, only the hospital pharmacist being in possession of the key. A placebo of lactose was used as a control and, in groups of six, patients were put on to certain tablets for a fortnight each. The results were classified according to the effect described by the patient himself. The patients were people 'comparable to those patients for whom sedation is commonly and properly prescribed in general practice'.

'No objective rating by the interviewing psychiatrist was attempted, for the aim of the enquiry was to find out how the patient felt, and the simplest way was to ask him'; and with these simple questions used as a criterion, five different drugs, each prescribed to be taken 3 times a day, were tested. The six sets of tablets were:—

1. Amylobarbitone ('Amytal').
2. Benactyzine ('Suavatil', 'Nutinal').
3. Chlorpromazine ('Largactil').
4. Meprobamate ('Equanil', 'Miltown', 'Mepavlon').
5. 'Sedaltine' (a poly-pharmaceutical preparation), and
6. Placebo (lactose).

After making due allowances for such patients as refused to co-operate and who had defaulted, the authors proceed to an analysis of their results. They found that 79 patients were included in the trial and that the great majority of them submitted a daily report on the response to each drug. They analyzed the variance in 7 groups of 6 patients and came to definite conclusions. Their final conclusion is significant; 'in terms of the patients' assessment, the average score for the placebo was close to a nil response, neither good nor bad; the average score for amylobarbitone was highly significantly superior to that of the placebo; there was no significant difference between the other four drugs and the placebo'.

The conclusions that are inescapable are that patients are unable to distinguish between the effects of many tranquillizers and that of the placebo, but that the effect of the barbiturate is unmistakeable. No report is given in this paper

VAN DIE REDAKSIE

KALMEERMIDDELS BY NEUROSE

Die onlangse eksperimente deur 'n span navorsers van die Departement Psigiatrie aan die St. George-hospitaal, Londen, verdien noukeurige aandag.[1] Hierdie groep het onderneem om die uitwerking van verskeie kalmeermiddels, soos die pasiënte dit self ondervind het, te bestudeer, en die toetse is met die grootste versigtigheid uitgevoer om te verseker dat die pasiënte en hulle dokters nie moes weet watter middels gebruik is nie. Slegs die hospitaalapteker was in besit van die sleutel. 'n Placebo van laktose is as kontrole gebruik; die pasiënte is in groepe van ses verdeel en 14 dae lank is elke groep met sekere tablette behandel. Die resultate is geklassifiseer volgens die pasiënte se eie verslae van die uitwerking van die tablette. Die deelnemers was mense wat vergelyk kon word met ‚dié pasiënte vir wie kalmeermiddels gewoonlik en met reg in die algemene praktyk voorgeskryf word'.

‚Die ondersoekende psigiater het nie probeer om die pasiënte se reaksies objektief te ontleed nie, want die doel van die toets was om uit te vind hoe die *pasiënt* voel, en die maklikste manier was om hom uit te vra'. 'n Stel eenvoudige vrae het as maatstaf gedien, en op hierdie manier is vyf verskillende middels, wat elk drie maal per dag geneem moes word, getoets. Die volgende middels is gebruik:

1. *Amylobarbitone* (‚Amytal').
2. *Benactyzine* (‚Suavatil', ‚Nutinal').
3. *Chlorpromazine* (‚Largactil').
4. *Meprobamate* (‚Equanil', ‚Miltown', ‚Mepavlon').
5. ‚Sedaltine' ('n polifarmaseutiese preparaat), en
6. Placebo (laktose).

Nadat rekening gehou is met pasiënte wat nie wou saamwerk nie en dié wat die reëls verontagsaam het, ontleed die skrywers die uitslae van hulle toetse. Hulle het bevind dat 79 pasiënte deelgeneem het en dat die meeste van hul daagliks verslag gedoen het oor hulle reaksies op die besondere middel. Hulle het die verskille tussen die 7 groepe van 6 pasiënte elk ontleed en definitiewe gevolgtrekkings bereik. Hulle slotsom is betekenisvol; volgens ‚die pasiënte se evaluasie' was die gemiddelde telling vir die reaksie op die placebo nagenoeg nul—nog goed, nog swak; die algemene telling vir die amielobarbitoon was veelbetekenend hoër as dié van die placebo; en daar was geen betekenisvolle verskil tussen die ander vier middels en die placebo nie.

Die onvermydelike gevolgtrekkings is dat die pasiënt nie in staat is om te onderskei tussen die effekte van baie kalmeermiddels en dié van die placebo nie, maar dat die uitwerking van die barbituraat onmiskenbaar is. Die psigiater se berekening van die effekte van hierdie besondere middels

of the psychiatrist's assessment of the effects of the given drugs on his patients, and such a report will be awaited with interest. One is once again faced with the question: Who knows what is best for the neurotic, worried man, his doctor or the patient? In the meantime, the use of the tranquillizing drugs will be continued with some reserve.

It is well to reflect on the significance of these tests and their implications. The tests were carried out on a group of depressed, neurotic patients, and it has always been stressed that it is these very types who, in general, will not be benefited by ataractics. It is clear that the subjective feeling of depression in such patients will respond equally well to placebos and firm reassurance as to tranquillizers. One thing is certain: the indiscriminate use of tranquillizers, self-prescribed by depressed non-psychotics, must be stopped; if necessary by law.

But there can be no doubt of the value of certain of these new tranquillizers in the treatment of psychosis. Reports on their efficacy have been received from several countries.[2-5] As many psychiatrists are convinced that neurosis is not in any way allied to psychosis[6] and that the neurotic is no more liable to develop a psychotic condition than any normal individual, the place of the tranquillizer in therapy is thus becoming more and more clearly defined.

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op die pasiënte word nie in hierdie referaat beskryf nie, en so 'n verslag word met groot belangstelling afgewag. Weer kom ons te staan voor die vraag: Wie weet die beste waarby die angsvolle, neurotiese mens baat vind—die dokter of die pasiënt self? Intussen sal die kalmeermiddels met 'n mate van versigtigheid toegedien word.

Dit is waardevol om na te dink oor die betekenis en implikasies van hierdie toetse. Die toetse is uitgevoer op 'n groep terneergedrukte, neurotiese pasiënte, en dit was nog altyd benadruk dat dit gewoonlik juis hierdie soort pasiënte is wat nie baat vind by kalmeermiddels nie. Dit is duidelik dat die subjektiewe emosie van terneergedruktheid by sulke pasiënte ewe goed reageer op placebo's en ferme gerusstelling as op kalmeermiddels. Een ding staan vas: die onoordeelkundige gebruik van kalmeermiddels deur terneergedrukte nie-psigote, sonder 'n dokter se voorskrif, moet gekeer word, desnoods deur die wet.

Maar dit is seker dat sommige van hierdie nuwe kalmeermiddels baie nuttig is by die behandeling van psigose. Verslae van hul doeltreffendheid bereik ons uit verskeie lande.[2-5] Baie psigiaters is daarvan oortuig dat neurose glad nie verwant is aan psigose nie,[6] en dat die neurotiese pasiënt nie méér geneig is as enige normale persoon om 'n psigose te ontwikkel nie. Die waarde van en aanwysings vir die kalmeermiddel in die terapie word dus al hoe duideliker omskryf.

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ALLERGY TO FUNGI

While much advance has been made in our knowledge of the morphological and cultural characteristics of pathogenic fungi, information is scanty on the fundamental mechanisms of the reactions of the body to them. Certain features are common to infections with bacteria and viruses, and to drug reactions. It must be recognized that there are both immediate and delayed hypersensitivity reactions to fungi, for example to trichophyton infections, but the factors leading to these reactions have not yet been elucidated. Polysaccharide excites the immediate reactions while protein is responsible more for the delayed reaction.

Little attention has been paid in the delayed reaction to the earlier phases, and similar studies to those made in connection with the tuberculin reaction[1] need to be undertaken. The delayed fungal hypersensitivity reaction would appear to depend on certain similar factors and mechanisms. Thus the antigen introduced into the skin is subjected to mechanical and other forces affecting spread and dilution, and the one agent can produce opposing end results. Delayed reactions are weaker in a pyrexial patient, and this is due to increased absorption of antigen, not to a weaker action. Similarly, in a number of other conditions such as pregnancy, cachexia, venous stasis and oedema, the weaker reactions to antigen are believed to be due to enhanced removal of the antigen from the test site. In conditions with a high incidence of immediate reactions a low incidence of delayed reactions would be expected. Failure to obtain a reaction calls for a search for the factor that militates against the reaction; thus an agent with wheal ing effect will affect the reaction.

For histoplasmosis, trichophyton and other fungal infections the 'fixation', spread and absorption of antigen, and the reaction (antigen-antibody, and inflammatory) also need to be studied as has been done with the tuberculin reaction.[1]

Increased retention of the allergen may cause stronger reactions. This has been demonstrated experimentally, for example with depot vehicles and with adrenaline, and has been observed clinically in conditions where there is decreased vascular activity.

As far as antibody is concerned, much evidence shows the reticulo-endothelial tissue to be the source. It will be interesting to determine with fungal antigens whether the same immunological processes occur. Careful interpretation of reactions is required, for paradoxical effects may occur; alteration in local circulation, as indicated above, and decrease or increase in the local delivery of lymphoid cells, the important carriers of antibody, will determine the degree and the validity of the local reaction. With trichophyton tests paradoxes occur and the technique used in the study of tuberculin reactions should be employed. Until specific elements from different fungi become available, skin tests will be unsatisfactory. Antigen of varying potency makes testing unreliable.

1. Editorial (1957): S. Afr. Med. J., **31,** 925.

INDUCTION OF LABOUR

AN ANALYSIS OF 1,877 CASES DONE IN THE MATERNITY HOSPITALS UNDER THE AEGIS OF THE UNIVERSITY OF CAPE TOWN DURING THE YEARS 1952—1956 (INCLUSIVE)

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Attempts to induce labour have been made since times as remote as the 6th century, when Aetius used sponge tents to dilate the cervix where the foetus was dead *in utero*. Surgical induction by dilatation of the cervix and rupture of the forewaters was introduced into English obstetrics by Macaulay in 1756 but Soranus of Ephesus was known to have employed the method in A.D. 138. Ecbolics have been used since times immemorial and ergot, first discovered in 1596, was used correctly in 1807 by Stearns. In 1909 the posterior pituitary extract was found by Blair Bell[1] to have an effect on the uterus and has been used in increasing amounts since that time, at first as Pituitrin and later as Pitocin.

In spite of the many advances in endocrinology and our knowledge of the physiology of the onset of labour, we still cannot by any of the methods at our disposal, produce the same excellent results as nature does.

METHODS OF INDUCTION

The methods available at the present time are:

1. *Pharmacological:*

Drugs: (*a*) Castor oil, (*b*) quinine.

Hormones: (*a*) Oestrogens, (*b*) extract of the posterior pituitary.

2. *Operative:*

(*a*) Stretching of the cervix

(*b*) Separation of the membranes

(*c*) Rupture of the membranes (i) high, (ii) low

(*d*) Introduction of foreign bodies into the uterus.

The method of induction used at the Cape Town group of teaching hospitals is as follows:

1. The intravenous injection of 10 ml. of a 10% solution of calcium gluconate. This is not invariably given in the initial induction but is always the commencing point should subsequent inductions be necessary.

2. At 2-hourly intervals thereafter a hot bath is given and 2 fl. oz. of castor oil and an enema are administered.

3. Rupture of the membranes is performed a further 2 hours later; usually the forewaters are punctured.

4. Pitocin is administered by the 'drip' method if labour has not commenced 12 hours after rupture of the membranes; 5 units of Pitocin in 1,000 ml. of 5% dextrose water is used and this solution is given by the double drip method at the rate of 15 drops per minute in the first instance, the subsequent rate being adjusted according to the uterine response obtained. During the time that Pitocin is being administered the patient is under the constant observation of a person well versed in obstetrics.

The operative methods employed in the series of cases reported in this article were as follows:

	Cases
Low puncture of the membranes	1,736
High puncture of the membranes	138
Stomach tube	2
Sea-tangle tent	1

Low puncture of the membranes was the method used in the vast majority of cases, because it is considered the safest and best procedure. The value of the rupture of the membranes appears to be enhanced if as much liquor amnii as possible is allowed to drain at the time of operation.

INDICATIONS FOR INDUCTION

The indications for which labour was induced in the present series were as follows:

Pre-eclampsia, hypertensive group ..	1,446	76·8%
Prolonged pregnancy (i.e. beyond 42 weeks)	157	8·5%
Eclampsia	83	4·5%
Diabetes mellitus	46	2·4%
Accidental haemorrhage	48	2·4%
Placenta praevia	21	1·1%
Disproportion	6	·4%
Hydramnios	10	·7%
Rhesus incompatibility	8	·4%
Others	52	2·8%
	1,877	100%

Convenience, or 'the baby by appointment' scheme, which is reported by writers from the United States, e.g. Erving and Kentwick[1] and Ratzan and Shulman,[2] we do not consider an indication for the induction of labour. It will be shown that there are definite dangers to both mother and foetus, albeit small, which preclude this practice from being adopted in our school.

The ideal conditions for the performance of induction are as follows:

(*a*) The vertex should be presenting and should be engaged in the pelvis.

(*b*) The patient should be as near to term as possible.

(*c*) The patient should be a multigravida.

(*d*) It is stated that the cervix should be soft and well taken up, i.e. 'ripe'. Many authorities are of the opinion that the state of the cervix is an important consideration before inducing labour and that a 'ripe' cervix is a prerequisite to successful induction. At no time, however, was the 'ripeness' or 'unripeness' considered as a prerequisite in our cases. Van Dongen,[3] with many other authors, believes that an 'unripe' cervix can be converted into a 'ripe' cervix with repeated medicinal and Pitocin inductions. To this, as to all generalizations, there are exceptions, and the 'unripe' cervix which responds well to induction, as well as the

opposite, occasionally occurs. If induction is essential, the state of the cervix should not be seriously considered. The position of the cervix is also of importance. Cocks[4] claims that he is able to predict the course of labour with reasonable accuracy from the cervix. The long uneffaced cervix in the sacral position is the least favourable, for it is often associated with a long latent interval, although labour, when established, is of average duration.

1. *The Pre-Eclamptic, Hypertensive Group.* This was the operative indication in the great majority (76·8%) of cases. The time of induction and the reasons therefor are fairly well defined and do not as a rule present a problem. More often the problem arises after induction, when it becomes necessary to consider whether the induction is a success and whether more radical steps should be taken to effect delivery. The problem patient is the one with severe pre-eclampsia who is not in labour 24 hours after induction and 12 hours after the commencement of the Pitocin drip and in whose condition no deterioration is evident. A comparison between McIntosh Marshall's[5] figures for Caesarean section and the present figures for induction of labour suggest that induction should be more frequently practised before resort to abdominal delivery.

	Caesarean Section	*Induction*	
		Guy's 1928—52	*Cape Town 1952—56*
	%	%	%
Maternal deaths	1·61	1·1	·1
Stillbirths and Neonatal deaths	17·1	14·6 (3·1)*	7 (3·2)*

* Corrected.

Townsend[6] found that when labour was induced for pre-eclampsia, 97% of cases were in labour within 48 hours, and he suggests that the pre-eclamptic patient may have an irritable uterus which responds readily to induction. This view is to some extent supported by the work of Parker,[7] who, although his results are not as good, suggests a 'trial induction' or 'trial of puncture' in pre-eclampsia.

2. *Postmaturity.* 'The risk of anoxia to the foetus *in utero* after term and the risk of intra-uterine death or unexpected death in labour becomes considerable at or about 43 weeks.'[8] This statement, made by Walker[8] in 1954, has given rise to considerable controversy. The facts upon which it was based were deduced from the measurement of the oxygen saturation in cord blood, at the moment of birth and at 40, 41, 42 and 43 weeks. The normal oxygen saturation was found to be 50-60% and the distress level 30%; distress is indicated by the passage of meconium. At 40 weeks the cord blood is well oxygenated but this level falls rapidly thereafter until at 43 weeks, even before the onset of labour, the level is 30%. The term 'obstetrical deaths' was coined, standing for all stillbirths and neonatal deaths during the first week after delivery, and the obstetrical death rate was found to be 1·5% at 40 weeks, 1·2% at 41 weeks, 2·1% at 42 weeks, 3·9% at 43 weeks and 6·5% at 44 weeks. Before deciding that a patient is postmature, all available evidence should be considered, and in particular the date of the last menstrual period and the reliability of the patient's observations are important. The dates of quickening and lightening and the clinical findings at antenatal clinic, particularly in the earlier weeks of pregnancy, must all be taken into account. A medical induction is considered by some to be a diagnostic test, failure of induction indicating an incorrect diagnosis of postmaturity. This view is condemned by Arnold and Wrigley.[9] In the final analysis, however, the foetal risk in postmaturity must be weighed against the foetal risk associated with induction of labour (in this series 7%-3·2% corrected) before a decision is made. At present the reports of Racker, Burgess and Mauly,[10] and Tennent and Black[11] do not suggest that the results after induction are worse than when a policy of expectant treatment is adopted. Parker[7] states that, in a case of genuine postmaturity, delivery should always be completed within 48 hours of induction.

3. *Rh. Incompatibility.* In the treatment of Rhesus sensitization the pendulum has recently swung from one extreme, premature induction, to the other, delivery at term. This alteration of opinion has been caused by the recent work which has shown that the degree of sensitization bears no relation to the antibody-titre level or the length of exposure to the antibodies. Pre-term rather than premature induction is advocated by Evans,[12] who by this method has raised the foetal survival rate from 3·6% to 91%. Pretorius,[13] however, has shown that delivery at term produces results as good, a foetal survival rate of 85% being obtained, and Armitage and Mollison[14] conclude that premature induction probably increases foetal mortality. A poor past history (i.e. where the mother has given birth to one or more infants with haemolytic disease), previous incompatible blood transfusions, or the appearance of antibodies for the first time late in pregnancy, are factors which would influence the medical attendant towards 'premature' induction.

4. *Disproportion.* This was the indication for induction in 25·5% of cases in the Guy's Hospital series 1928-52.[15] In our series disproportion was the reason for inducing labour in only 0·4% of cases. The reason for this vast difference is the present-day safety of Caesarean section and the universal acceptance of the concept of a trial of labour where a suspicion of cephalo-pelvic disproportion exists. Most obstetricians are of the opinion that disproportion is no longer an indication for the premature induction of labour.

5. *Diabetes Mellitus.* It is an accepted fact that pregnancy must be terminated at or about the 36th week, because of the dangers to the foetus *in utero* after that time.[16] In our institutions Caesarean section is performed as an elective procedure only for an obstetrical indication. Induction of labour is performed in the first instance in the majority of pregnant diabetics. Should labour not commence, or should labour be poor or prolonged, Caesarean section is performed.

METHODS OF DELIVERY

The methods of delivery in this series of inductions were as follows:

Spontaneous		1,691	
Forceps deliveries		101	
Breech deliveries		23	
Caesarean section:			
(i) For failure of induction	68		
(ii) for other indications	10		
(iii) for failure of induction and cephalo-pelvic disproportion	1	79	
Destructive operations		3	
		1,897	(20 twins)

Success of Induction

Labour was successfully induced in 96·1% of cases. The remaining cases were either terminated by Caesarean section or labour commenced spontaneously at a later date. This figure compares favourably with other reported series: e.g. Faris and Kohlenberg[17] 94·7% success rate and, Van Dongen[3] 100% success rate in the combined method. The induction-delivery interval was 37 hours 33 minutes with high rupture of the membranes and 24 hours 43 minutes with low rupture of the membranes.

It would appear that low puncture of the membranes produces delivery after a shorter interval but, owing to the small number of high ruptures performed, this conclusion would not be warranted on statistical grounds. Gibson[18] points out that rupture of the hindwaters is less effective than a forewater puncture and Parker's results[7] tend to support this evidence. On these grounds, therefore, the recommendation of a low puncture of the membranes seems justified.

THE HAZARDS OF INDUCTION OF LABOUR

Although a relatively simple procedure, the induction of labour carries certain definite risks to both mother and foetus.

1. *Maternal Deaths*

In this series of 1,877 inductions there were 11 maternal deaths and, since maternal deaths are always of the utmost interest, summaries of these are presented:

(i) Mrs. E.P., a 28-year-old Coloured grav. 5 para 4, was admitted as a non-booked case, at term, with severe pre-eclampsia. A medicinal and surgical induction of labour was performed with the delivery 7 hours later of a stillborn 9-lb. infant. The mother developed intrapartum and postpartum eclampsia and had a total of 4 fits. Death occurred 12 hours after delivery. Autopsy revealed a subarachnoid haemorrhage and eclamptic haemorrhages into the liver, adrenals and kidneys.

(ii) Mrs. P. de L., a 26-year-old Coloured primigravida, was admitted at term with severe pre-eclampsia as a booked case. On admission the patient had 4 eclamptic fits in rapid succession and an induction of labour was performed. The spontaneous delivery of a live 6-lb. infant occurred 14 hours after induction, but in the postnatal period the mother developed oliguria followed by anuria, and death occurred on the 3rd postnatal day. Autopsy showed bilateral cortical necrosis with zonal necrosis of the liver.

(iii) Mrs. A. van R., a non-booked 17-year-old Coloured primigravida, was admitted comatose, having had 30 fits before admission. Induction of labour was performed but the patient's condition deteriorated rapidly and she died 5 hours after admission. Autopsy findings were those typical of eclampsia with associated pulmonary oedema.

(iv) Mrs. M.D., a non-booked 30-year-old Coloured grav. 4 para 3, was admitted at 34 weeks having had 4 eclamptic fits. Induction of labour was performed immediately but the patient died undelivered 3 hours after admission. Autopsy revealed the typical changes of eclampsia with a haemoperitoneum from a ruptured hepatic haematoma.

(v) Mrs. V.W. a non-booked 26-year-old African grav. 4 para 2, was admitted at 38 weeks with a severe pre-eclampsia. Induction of labour was performed, with a spontaneous delivery 5 hours later. After delivery the patient had 10 eclamptic fits in 18 hours and subsequently developed anuria, with death on the 2nd postnatal day. Autopsy revealed bilateral cortical necrosis and haemorrhage into the liver and suprarenals, associated with the typical findings of eclampsia.

(vi) Mrs. R. le R., a non-booked 28-year-old Coloured grav. 10 para 5, was admitted at 32 weeks with severe hypertension, B.P. 190/110 mm. Hg. Albuminuria with a blood urea of 372 mg.%. Induction of labour was performed, with spontaneous delivery 16 hours later. After delivery oliguria developed and the patient died on the 12th postnatal day. The clinical diagnosis was chronic pyelonephritis, aggravated by pregnancy. Consent for autopsy was refused.

(vii) Mrs. M.S. a 22-year-old Malay grav. 3 para 2, was admitted as a non-booked case at 34 weeks, having had 5 eclamptic fits and a severe accidental antepartum haemorrhage. Induction of labour was performed, with a spontaneous delivery 8 hours later. Anuria followed delivery and the patient died on the 10th postpartum day. Consent for autopsy was refused.

(viii) Mrs. G.C., a Coloured 40-year-old grav. 21 para 9, was admitted as a non-booked case at 36 weeks with severe pre-eclampsia. Induction of labour was performed, with the delivery 12 hours later of a live infant. A severe postpartum haemorrhage followed, for which a hysterectomy was eventually performed. Post-operatively, anuria developed and the blood urea rose from 182 mg.% to 260 mg.%. The patient died on the 7th post-operative day and autopsy revealed bilateral chronic pyelonephritis with dilated ureters, pulmonary oedema and septic infarcts of the lungs, and a septic grey spleen.

(ix) Mrs. C.F., a 33-year-old Coloured grav. 7 para 6, was admitted at term as a non-booked case, having had 9 eclamptic fits. Surgical induction of labour was performed and was followed by spontaneous delivery 3 hours later. Death occurred with an associated temperature of 107°F 8 hours later. Autopsy revealed the typical changes of eclampsia with haemorrhages into the pons and midbrain and into the liver.

(x) Mrs. W.D., a 42-year-old European grav. 4 para 3, was admitted at 28 weeks as a non-booked case. Three weeks previously she had undergone mastectomy for a cancer of the breast. Labour was induced, with a spontaneous live birth 3 hours later. On the 3rd postpartum day the patient collapsed and died very suddenly, either from a pulmonary embolus or secondary malignant deposits. Consent for autopsy was refused.

(xi) Mrs. S.B., a 30-year-old Coloured primigravida, was admitted at 30 weeks gestation as a grade-IV cardiac. In spite of intensive and prolonged therapy there was no improvement in the cardiac status and labour was induced, with a spontaneous live birth 12 hours later. The patient suddenly collapsed 12 hours after delivery and died in acute cor pulmonale. Consent for autopsy was refused.

The cases in which induction of labour may be indicated as a factor in the maternal death are cases (x) and (xi), but this is certainly not the only operative factor. Accepting that the induction of labour is partly responsible for these maternal deaths the maternal mortality rate would be 0·1%.

A striking fact evident from this analysis, which serves to emphasize the importance of antenatal care, is that 9 of the deaths occurred in patients who had not previously sought care at an antenatal clinic.

2. *Infant Mortality*

In this series of cases 1,897 infants were delivered, including 20 sets of twins. Stillbirths accounted for 86 foetal deaths, and neonatal deaths for 47, representing a total foetal loss of 133 (7%).

The details of the foetal deaths are as follows:

STILLBIRTHS 86

1. *Premature Infants*

(*a*) *Under* 3 *lb.*

5 associated with pre-eclampsia
3 associated with eclampsia
4 associated with accidental haemorrhage 12

(*b*) *Under* 4 *lb.*

5 associated with pre-eclampsia
3 associated with accidental haemorrhage
1 macerated foetus
1 congenitally deformed infant
1 associated with placenta praevia
1 associated with eclampsia 12

(*c*) *Under 5 lb.*
- 4 associated with accidental and unclassified APH
- 3 associated with pre-eclampsia
- 3 associated with eclampsia
- 2 anencephalics
- 2 internal versions and breech extractions
- 1 macerated foetus 15

(*d*) *Under 5½ lb.*
- 3 associated with pre-eclampsia
- 1 associated with accidental APH 4

Total stillbirths of premature infants 43

2. *Mature Infants*
- 17 associated with accidental and unclassified APH
- 11 associated with pre-eclampsia (including 2 breech extractions)
- 7 associated with eclampsia (1 embryotomy; 2 forceps deliveries)
- 2 associated with placenta praevia
- 2 associated with diabetes (macerated infants)
- 1 associated with a prolapsed cord
- 1 associated with cardiac disease and an unclassified APH
- 2 breech deliveries

43 Total stillbirths of mature infants.

NEONATAL DEATHS 47

1. *Premature Infants*

(*a*) *Under 3 lb.*
- 8 associated with pre-eclampsia
- 1 associated with accidental APH 9

(*b*) *Under 4 lb.*
- 7 associated with pre-eclampsia
- 3 associated with accidental APH
- 1 associated with cardiac disease
- 1 associated with eclampsia
- 1 associated with Rh incompatibility
- 1 died of intra-uterine pneumonia 14

(*c*) *Under 5 lb.*
- 9 associated with pre-eclampsia
- 2 died of intra-uterine pneumonia 11

(*d*) *Under 5½ lb.*
- 1 associated with pre-eclampsia
- 1 anencephalic
- 1 with congenital cardiac disease
- 1 associated with diabetes (macerated) 4

2. *Mature Infants*
- 4 associated with pre-eclampsia (including 1 forceps delivery)
- 2 associated with eclampsia (both forceps deliveries)
- 1 associated with accidental APH
- 1 twin pregnancy with pre-eclampsia (delivery by Caesarean section)
- 1 twin pregnancy with postmaturity 9

Total Neonatal Deaths 47

The unavoidable foetal deaths are those with no foetal heart sounds on admission, macerated infants, congenital malformations incompatible with life, and infants under 3 lb. When these are deducted from the total foetal loss, a corrected foetal mortality rate of 3·2%, composed of 43 stillbirths and 16 neonatal deaths, is obtained. The number of premature infants delivered, i.e. under 5½ lb., which were either stillborn or died subsequently, was 81. This means that 61·4% of the total foetal loss were premature infants. In addition, the total number of premature infants delivered in this series was 601, which means that 32% of all infants delivered were premature. These findings support the fact that where a large number of inductions of labour are performed all facilities should be available for dealing with premature infants.

A glance at the analysis of the foetal deaths in this series emphasizes that the infants lost are all subjected to an extra burden in pregnancy and labour in that there is in all cases a complicating maternal factor, usually of a severe nature. In the vast majority of cases this factor provides the indication for the induction of labour.

3. *Maternal Morbidity*

The morbidity rate in this series was 3·9%, as compared with a total morbidity rate in spontaneous delivery of 3·7%. In Blaikley's series[19] these figures were 10·8% and 4·3% respectively. It was shown in the Guy's Hospital series,[15] where the morbidity rate associated with induction was 5·3%, that there was a direct correlation between the length of labour and maternal morbidity. Thus, if labour lasted less than 48 hours the rate of morbidity was 6·6%, whereas if labour lasted 96 hours or longer, the morbidity rate was 20·7%. A great deal of the infection is introduced by the vaginal manipulations if the standard of asepsis and antisepsis is not maintained at the highest levels. Too frequently today aseptic and antiseptic techniques are not rigidly observed because of the reliance placed on the antibiotic cover. This attitude can only be condemned. Obviously, however, these great aids must be fully utilized, and the morbidity rate can be reduced by the routine administration of the antibiotics when the membranes have been ruptured for 12 hours or longer, or even earlier in potentially infected cases.

4. *Prolapse of the Umbilical Cord* (Incidence 0·5%)

This is a complication of surgical induction which is greatly feared by all obstetricians but is luckily a rare occurrence. In this series there were 9 cases in which the umbilical cord preceded the presenting part after the membranes had been ruptured; 8 occurred with low ruptures and 1 in high puncture. This fact is of no significance in view of the small number of high ruptures performed and it appears that the incidence of prolapse of the umbilical cord is not influenced by the type of rupture performed.[19]

A fact of considerable importance that emerges from this analysis is that this complication occurred 8 times in multigravidae and only once in a primigravida. The risk to the foetus would thus appear to be much greater in multiparae, possibly due to the greater frequency of non-engagement of the presenting part. This, too, is the reason why some obstetricians consider it inadvisable to rupture the membranes in a breech presentation and are content with stripping the membranes off the cervix only.

5. *Postpartum Haemorrhage*

No increase in the incidence of postpartum haemorrhage appears to be associated with induced labours. This fact is supported by the work of Theobald[20] and of Freedman, Taffen and Harris.[21] The over-all postpartum haemorrhage rate was 11·8%, and the use of the Pitocin drip appears to diminish it slightly; the incidence in these cases was 9·3%. This is in agreement with van Dongen's report,[3] in which the postpartum haemorrhage rate in this type of case is 7·2%, the lowest in his series of published cases.

A further reduction in the postpartum haemorrhage rate

is to be expected if the Pitocin drip, where used, is not removed at the start of the second stage so that, if necessary, it is available during, and possibly beyond, the third stage of labour.

6. *Separation of the Placenta*

This is a rare complication of induction of labour, having occurred only once in the present series. In point of fact an accidental haemorrhage results and treatment should be prompt and efficient. Parker[7] suggests that accidental haemorrhage is very often associated with an excess of liquor amnii and that this type of case would be better treated by transabdominal paracentesis uteri—a practice not used in our institutions.

CONCLUSIONS

1. Induction of labour performed in well-selected cases does not on its own endanger the life of the mother or foetus.

2. Induction does not appear to increase the postpartum haemorrhage rate.

3. A large number of the infants will be premature at birth, and for this reason adequate facilities should be available for nursing premature infants after delivery.

4. Maternal morbidity can be reduced to very small proportions by attention to asepsis and antisepsis and by the timely use of antibiotics.

5. Prolapse of the cord occurs more commonly in multigravidae, possibly owing to non-engagement of the presenting part—a factor to be considered before undertaking the procedure.

6. The foetal mortality rate in postmaturity must always be weighed against the foetal risk inherent in the induction of labour, before deciding what course to adopt.

7. Evidence available at present suggests that low rupture of the membranes is the procedure of choice in the surgical induction of labour.

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HAEMOLYTIC ANAEMIA, THROMBOCYTOPENIA AND URAEMIA IN ECLAMPSIA

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Haemolytic anaemia has long been known as a not infrequent complication of eclampsia.[1] Thrombocytopenia may also be associated with eclampsia,[2, 3] while the simultaneous occurrence of both haematological complications has recently been reported by Pritchard *et al.*[4] As these haematological disturbances may have an important bearing on the pathogenesis and therapy of eclampsia, it is the purpose of this paper to draw attention to their occurrence and management, by presenting 2 cases in African patients in whom eclampsia was associated with acute intravascular haemolysis, thrombocytopenia, and uraemia.

CASE 1

J.N., aged 40 (blood group B, Rh-positive), was admitted to hospital on 14 December 1956 with a history of severe headache and blurring of vision of 2 days' duration. Her last menstrual period was in June 1956 and she had not attended an antenatal clinic. Her only previous pregnancy in 1952 was normal. There was no history of drug ingestion or injections.

She was obese, restless and confused. The temperature was 98°F, the pulse rate was 90 per minute, and there was no evidence of shock. Moderate peri-orbital oedema and mild ankle oedema were present. The blood pressure was 260/180 mm. Hg. A heaving apex beat was felt in the 5th intercostal space ½ inch outside the mid-clavicular line, and the aortic second sound was accentuated. Fundoscopy showed extreme narrowing of the arteries, several segments being completely bloodless; marked thickening of the arterial wall and arterio-venous compression were noted; there were superficial haemorrhages and numerous ill-defined white exudates in the retinae; the optic discs were normal. On abdominal examination a 24-week pregnant, non-tender uterus of normal consistency was palpated. Apart from the mental state, the results of examination of the central nervous

system were negative. Two hours after admission the patient had a generalized convulsion.

Investigations on Admission

The urine was dark red in colour, with a specific gravity of 1020. Massive proteinuria was present and microscopy revealed large numbers of red blood-cells. Methaemoglobin was detected on spectroscopic examination.

The cerebrospinal fluid was at a pressure of 240 mm. of water, but was chemically and microscopically normal.

The haemoglobin (estimated as oxyhaemoglobin with a Klett-Summerson photoelectric colorimeter) was 13·1 g.* per 100 ml., leucocytes 15·0 thousand per c.mm. (neutrophils 79·5%, monocytes 2·5%, lymphocytes 17·0% and myelocytes 1·0%), packed cell volume 35%, mean corpuscular haemoglobin concentration 36%, reticulocytes 5%, and normoblasts 750 per c.mm. On the smears the red cells showed marked anisocytosis, moderate poikilocytosis, and the presence of deformed erythrocytes—spherocytes, 'triangular cells', 'helmet cells', and schistocytes. Platelets were not obviously reduced in numbers, although occasional abnormal forms were noted. Methaemoglobin was not detected. The blood urea was 140 mg. per 100 ml.

Course and Treatment

After sedation with paraldehyde, no further fits occurred. The urinary output for the first 24 hours was 60 ml. Treatment with Bull's regime[6] was instituted (Fig. 1). Between 15 and 22 December she became increasingly confused and lethargic, while

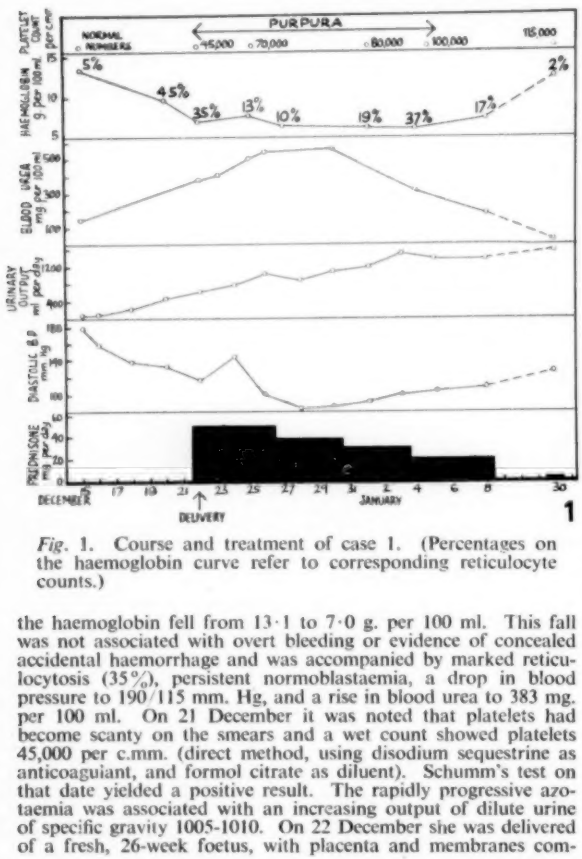

Fig. 1. Course and treatment of case 1. (Percentages on the haemoglobin curve refer to corresponding reticulocyte counts.)

the haemoglobin fell from 13·1 to 7·0 g. per 100 ml. This fall was not associated with overt bleeding or evidence of concealed accidental haemorrhage and was accompanied by marked reticulocytosis (35%), persistent normoblastaemia, a drop in blood pressure to 190/115 mm. Hg, and a rise in blood urea to 383 mg. per 100 ml. On 21 December it was noted that platelets had become scanty on the smears and a wet count showed platelets 45,000 per c.mm. (direct method, using disodium sequestrine as anticoaguiant, and formol citrate as diluent). Schumm's test on that date yielded a positive result. The rapidly progressive azotaemia was associated with an increasing output of dilute urine of specific gravity 1005-1010. On 22 December she was delivered of a fresh, 26-week foetus, with placenta and membranes complete. Blood loss was slight. A few hours later it was noted that there were petechiae over the left side of the chest, the gums were bleeding and there were bruises in the right groin and over the right forearm. Marrow aspirated from the sternum revealed normoblastic hyperplasia (myeloid erythroid ratio 1 : 1·9), with numerous mitotic figures and macronormoblasts. Megakaryocytes were numerous but were not considered to be present in increased numbers; a conspicuous maturation defect was noted, with no cell showing any evidence of platelet budding, and no free-lying platelets were detected. The myeloid series was normal, and no foreign elements were noted in the marrow.

Treatment with prednisone, 12·5 mg. 6-hourly by mouth, was started on 22 December with a view to halting the progressive haemolysis and thrombocytopenia. Over the next 8 days the mental state gradually improved, while the blood pressure after an initial rise, fell to normal levels. The haemoglobin value and platelet count showed little change, reticulocytosis and normoblastaemia persisted, and the bone marrow remained unaltered. Schumm's test on 25 December was again positive. The blood urea continued to rise, reaching its peak on the 8th day, and as before was accompanied by an increasing output of dilute urine. By the 13th day of prednisone therapy the patient was mentally clear, the purpura was resolving, the blood urea was falling rapidly, and the haemoglobin and platelet count were beginning to rise. By the 33rd day of therapy the haematological and biochemical findings were almost normal. The blood pressure, however, had slowly risen and become stabilized around a diastolic pressure of 125 mm. Hg. The urinary output was normal but the specific gravity was fixed at 1010 and the Esbach value was 0·25 g. protein per litre. Fundoscopy revealed that the haemorrhages and exudates had virtually disappeared. The arterial changes remained. Icterus was not observed throughout the entire course of the illness. On 30 January 1957, 40 days after its commencement, prednisone was stopped. The haemoglobin value was now 12·1 g. per 100 ml, reticulocytes 2% and platelets 115,000 per c.mm. The bone marrow had reverted to normal; the myeloid-erythroid ratio was normal, and many platelet-forming megakaryocytes were present.

After recovery from the acute episode the clinical finding of left ventricular hypertrophy was confirmed radiologically and electrographically. Both kidneys showed markedly reduced excretion on the intravenous pyelogram. The phentolamine test was negative.

CASE 2

L.N., aged 38 (blood group A, Rh-positive), was admitted to hospital on 11 January 1957 in a state of stupor. The history (obtained after recovery) was that she had been quite well until the day of admission, when she was suddenly seized with severe headache, vomiting and blurring of vision, followed a few minutes later by loss of consciousness. An accompanying letter from a practitioner who saw her a few hours later stated that a generalized convulsion had been observed. Her last menstrual period was on 15 July 1956 and she had not attended an antenatal clinic. There were 7 previous pregnancies. Of these, 5 were normal, the 4th ended in an abortion at 2 months, while in the last trimester of the 7th pregnancy she was admitted 'with swelling of the feet' to another hospital, where she stayed for 7 weeks before being delivered in January 1954, of a normal infant at the 8th month of pregnancy. There was no history of drug ingestion or injections.

She was moderately obese, restless and stuporose. The temperature was 98·2°F, the pulse rate 96 per minute, and there was no evidence of shock. There was moderate sacral and ankle oedema. Purpuric spots were scattered over the trunk and the proximal parts of the limbs. The blood pressure was 220/140 mm. Hg. A heaving apex beat was felt in the 5th intercostal space, ½ inch outside the mid-clavicular line, and the aortic second sound was markedly accentuated. Fundoscopy showed bilateral papilloedema, numerous white, soft exudates and a few superficial haemorrhages; the arteries were mildly narrowed. Abdominal examination revealed a 26-week pregnant, non-tender uterus of normal consistency.

Investigations on Admission

The urine was dark red in colour, with a specific gravity of 1015. Massive proteinuria was present and microscopy showed large numbers of erythrocytes.

* In Johannesburg (altitude 5,740 feet) the mean haemoglobin value for adult females is 15·3 g. per 100 ml., with lower limit of normal 12·9 g. per 100 ml.[5]

The cerebrospinal fluid was xanthochromic and contained 60 erythrocytes and 1 polymorphonuclear cell per c.mm., protein 90 mg. per 100 ml., and sugar 85 mg. per 100 ml. The pressure was not measured.

Blood count showed haemoglobin 13·8 g. per 100 ml., leucocytes 15·0 thousand per c.mm. (neutrophils 82·0%, monocytes 7·0%, and lymphocytes 11·0%), packed cell volume 38%, mean corpuscular haemoglobin concentration 36%, and reticulocytes 2·5%. On the smears the red cells showed no obvious morphological abnormalities, and no normoblasts were noted; platelets were scanty. The blood urea was 160 mg. per 100 ml.

Course and Treatment

Sedation with paraldehyde was started on admission. The urinary output for the first 24 hours was 400 ml. Treatment with a modification of Bull's regime[6] was instituted (Fig. 2). During the night of 12 January she was delivered of a fresh,

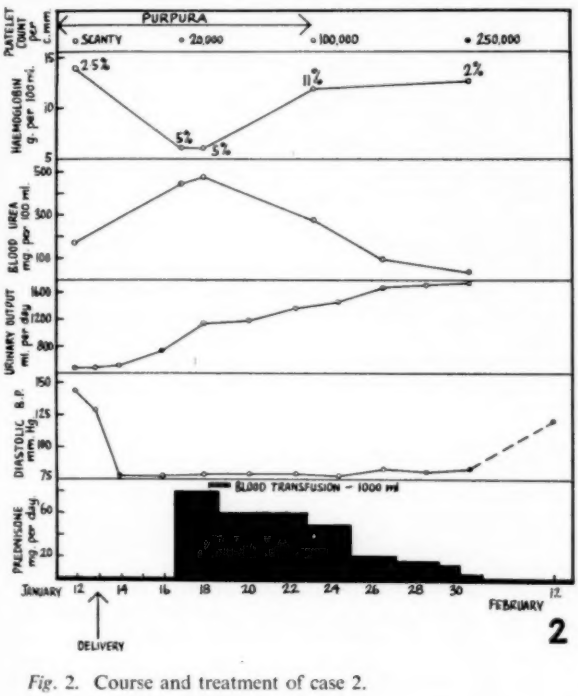

Fig. 2. Course and treatment of case 2.

28-week foetus with placenta and membranes intact. Blood loss was slight. Within 24 hours of delivery the blood pressure fell to normal levels but the stupor continued. On 17 January it was noted that she was pale, despite the absence of an obvious source of bleeding. Blood count now showed haemoglobin 6·4 g. per 100 ml., leucocytes 19·5 thousand per c.mm. (neutrophils 81%), reticulocytes 5%, and normoblasts 975 per c.mm. The red cells showed marked anisopoikilocytosis, with the presence of 'helmet cells', 'triangular cells', schistocytes, and occasional spherocytes. Platelets were 20,000 per c.mm. Schumm's test yielded a positive result. Marrow aspirated from the sternum showed active normoblastic erythropoeisis; megakarvocytes were present in normal numbers, but there was a conspicuous 'maturation arrest' with absence of forms showing platelet-budding, and no free-lying platelets. The myeloid series appeared normal, and no foreign elements were present. The blood urea was 430 mg. per 100 ml., its rise being associated with an increasing output of dilute urine of specific gravity 1004-1010.

In view of the haemolysis and thrombocytopenia, treatment with prednisone, 20 mg. 6-hourly by mouth, was started. On 18 January a transfusion of 1000 ml. of blood was given. Thereafter improvement was so rapid that 14 days after starting prednisone the patient was clinically, haematologically and biochemically normal, apart from the urinary specific gravity, which was fixed at 1010 and the proteinuria of 0·25 g. per litre (Esbach). At no stage of the illness was icterus observed. On 6 February the blood pressure began to rise and eventually became stabilized around a diastolic pressure of 115 mm. Hg.

After recovery from the acute episode an X-ray of the chest confirmed the clinical finding of left ventricular hypertrophy, although the electrocardiogram was normal. The intravenous pyelogram and the phentolamine test were normal.

OTHER LABORATORY INVESTIGATIONS

The results of further investigations carried out on the 2 cases during the phase of acute haemolysis were essentially similar. The serum bilirubin was 0·8, 0·9 and 0·6 mg. per 100 ml. in case 1, and 0·8 mg. per 100 ml. on 2 occasions in case 2. At no stage was urobilin in excess found in the urine. The osmotic fragility of the red cells was moderately increased; case 1 showed 4% haemolysis in 0·55% NaCl, and in case 2 haemolysis commenced in 0·60% NaCl. Heinz bodies were not detected. The direct Coombs test, performed on 4 occasions in case 1 and on 3 occasions in case 2, was negative. Abnormal antibodies could not be demonstrated with enzyme-treated erythrocytes or by the indirect Coombs test. Ham's acid-serum test and the Donath-Landsteiner test were negative, and cold agglutinins were not present. Sickling could not be demonstrated. Paper electrophoresis of haemoglobin in a veronal buffer (pH 8·6) showed a single component with mobility of haemoglobin A. In case 1 alkali resistant haemoglobin was 0·9% and solubility in 2·58 M. phosphate buffer (pH. 6·9, 25°C) 1·30 g. per litre; in case 2 the results were 0·3% and 1·42 g. per litre respectively.

Platelet agglutinins were detected in the sera of both patients; a simple method was used, the platelet suspension being prepared from normal blood, with the use of siliconized apparatus and an anticoagulant comprising equal volumes of 1% disodium sequestrine and 1% 'Triton W.R. 1339'. 0·05 ml. of the platelet suspension was added to 0·05 ml. of the test serum in a siliconed tube and allowed to stand at room temperature for an hour. The suspensions were then examined microscopically on siliconed slides; in both cases no free-lying platelets remained, while with the control sera the platelets were not agglutinated.

Malaria parasites were not detected, and 'L.E.cells' could not be demonstrated. Section of trephine specimens of bone marrow showed no evidence of hyaline thrombi. Viral and rickettsial complement fixation tests were negative. The V.D.R.L., Kahn, and Kolmer tests were negative; the treponema immobilization test was positive (100% specific immobilization) in case 1 and negative in case 2 (5% specific immobilization). Serum proteins in case 1 were albumin 2·0 g. per 100 ml. and globulin 3·0 g. per 100 ml; in case 2 albumin was 2·9 g. per 100 ml. and globulin 3·7 g. per 100 ml.

DISCUSSION

The essential features of the two cases described above may be summarized as follows:

Both patients had long-standing hypertension as shown by left ventricular enlargement, while case 1 showed signs of well-marked arteriosclerotic retinopathy in addition. This pre-existing hypertension, probably essential in nature, was complicated by eclampsia at the beginning of the third trimester of pregnancy. The eclampsia in turn was complicated by:

(*a*) Acute intravascular haemolysis as shown by rapid fall in haemoglobin (not accounted for by haemorrhage), methaemalbuminaemia (positive Schumm's test), methaemoglobinuria (case 1), spherocytosis and schistocytosis; and compensatory erythropoeisis as manifest by reticulocytosis, normoblastaemia, and erythroid hyperplasia in the marrow (case 1). The increase in the osmotic fragility of the red cells is possibly further evidence of haemolysis, but this finding must be viewed with some reserve, for minor increases in red-cell fragility may occur in normal pregnant women.[7] The absence

of hyperbilirubinaemia and excessive urinary urobilin is consistent with intravascular haemolysis.

(*b*) Thrombocytopenic purpura associated with a megakaryocytic marrow showing defective platelet-genesis, and the presence of platelet agglutinins in the peripheral blood.

(*c*) Acute renal failure.

Treatment of case 1 with prednisone and of case 2 with blood transfusion and prednisone was associated with the resolution of the haematological disturbances and the return of the blood urea to normal levels. Both cases, however, were left with hyposthenuria and mild proteinuria.

Three problems merit discussion.

1. *The Relationship between Haemolysis and Uraemia in Eclampsia*

A striking feature of these cases was the occurrence of severe intravascular haemolysis developing *pari passu* with the rapidly progressive azotaemia. How are these phenomena related? Acute renal failure is a well recognized complication of eclampsia and is usually attributed to ischaemic necrosis on the basis of spasm of the interlobular arteries.[8] Recently evidence has accumulated that azotaemia, irrespective of its etiology, may, when rapidly progressive, give rise to severe haemolytic anaemia. Muirhead *et al.*[9] noted that a progressive anaemia, which was largely haemolytic in nature, occurred in bilaterally nephrectomized dogs, while Chaplin and Mollison[10] found that the survival of transfused, normal erythrocytes was diminished in 6 patients suffering from rapidly progressive uraemia. Swann and Merrill[11] state that severe anaemia is one of the most constant features in the clinical course of acute renal failure, and they suggest haemolysis as a possible mechanism. The pathogenesis of haemolysis in uraemia is unknown. Uraemia, however, cannot explain all cases of haemolytic anaemia in eclampsia, since an analysis of several case reports of haemolytic anaemia associated with severe toxaemia,[4, 12, 13] revealed that haemolysis may be well marked at a time when the blood urea is either normal or only slightly elevated. Nevertheless, even in a patient with pre-existing haemolysis, the supervention of uraemia may significantly aggravate the haemolytic process.

The fact that haemolysis may precede the acute renal failure suggests another pathogenetic sequence. Thus, intravascular haemolysis in eclampsia may cause acute renal failure on the basis of haemoglobinuric nephrosis.[14] The fact that Fahr[15] found haemoglobin casts in the kidney tubules in 18 out of 33 fatal cases of eclampsia suggests that haemoglobinuric nephrosis is a not uncommon complication. The circumstances under which haemoglobinuria produces renal damage are complex. The intravascular injection of considerable amounts of haemoglobin into humans did not produce renal damage.[16] Similarly, haemoglobinuric nephrosis is rare, or has not been observed, in several haemolytic syndromes, such as paroxysmal cold haemoglobinuria, paroxysmal nocturnal haemoglobinuria, and acquired haemolytic anaemia.[17] It is clear that haemoglobinaemia *per se* will not produce haemoglobinuric nephrosis. Yuile[18] showed that the injection of haemoglobin solutions into rabbits did not injure the kidneys. However, when the haemoglobin solutions were injected after the kidneys had been rendered ischaemic by preliminary clamping of the renal arteries for 15-25 minutes, renal lesions closely similar to those of human haemoglobinuric nephrosis were produced. It is possible that the reduction in the renal blood flow in eclampsia may similarly predispose towards the development of haemoglobinuric nephrosis in the presence of intravascular haemolysis. In particular, attention is drawn to the possibility that a degree of interlobular arterial spasm, insufficient by itself to produce acute renal failure on the basis of ischaemic necrosis, may yet do so by predisposing towards haemoglobinuric nephrosis. Fig. 3 shows the possible relationships between haemolytic anaemia and uraemia in eclampsia, and demonstrates how vicious circles may arise.

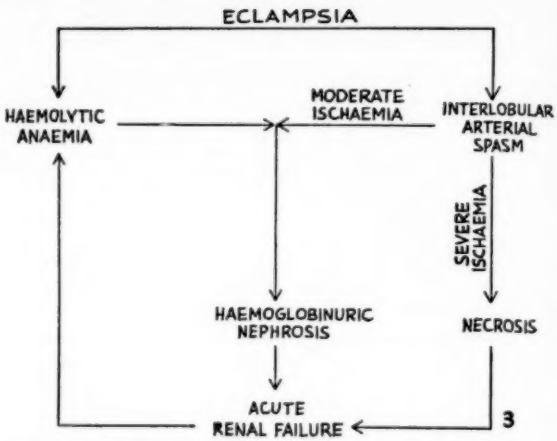

Fig. 3. Possible relationships between haemolytic anaemia and uraemia in eclampsia.

2. *The Relationship between Eclampsia and the Haematological Disturbances*

The possible relationships may be divided into 3 broad categories:

(*a*) The association of eclampsia with the haematological disturbances may be coincidental, the latter being attributable to some other cause. Virtually any type of haemolytic anaemia may manifest itself during pregnancy. However, as has been found by others, it was not possible to demonstrate any of the better-known causes of haemolytic anaemia on clinical or laboratory investigation.

(*b*) The haematological disturbances and the eclampsia may both be due to a common cause. Several workers[19-21] have suggested that eclampsia is best explained as an allergic phenomenon. The fact that pre-eclampsia and eclampsia are strikingly similar to acute glomerulonephritis, a condition generally accepted as allergic in nature, is stressed by Peters.[22] The combination of haemolytic anaemia and thrombocytopenia is not uncommon and points to an immunological disorder. This combination, in the absence of a chemical or infective cause, is generally found in conditions which are thought to be due to an immunological disturbance, such as lupus erythematosus[23] and thrombotic thrombocytopenic purpura.[24] Acquired haemolytic anaemia may be complicated by thrombocytopenia,[25] and the evidence suggests that both the haemolytic anaemia and the thrombocytopenia are due to the formation of auto-antibodies capable of destroying the erythrocytes and the platelets. In the two cases reported above, investigations failed to demonstrate abnormal antibodies against the erythrocytes. This has also been the experience of other workers, with the exception of Pritchard

et al.,[26] who found the direct Coombs test transiently positive in 2 out of 11 toxaemic women. It is of interest that platelet antibodies could be demonstrated in the sera of the two cases reported here; the significance of this finding is however, doubtful, in view of the lack of any agreement on the validity of techniques for the detection of platelet agglutinins. The immunological hypothesis, although suggestive, remains unproved.

(*c*) There remains the possibility that eclampsia in some as yet unknown way may be responsible for the haemolysis and the thrombocytopenia. As pointed out above, the uraemia which may complicate eclampsia is not an adequate explanation for the haemolysis nor, according to Dacie,[27] can it account for the thrombocytopenia.

3. *Therapy*

The possibility that an immunological disturbance underlies the haemolytic anaemia and thrombocytopenia in eclampsia suggested the use of cortisone or one of its related steroids. Certainly the use of prednisone in case 1 and prednisone together with blood transfusion in case 2 was associated with rapid recovery. In particular the prompt rise in the platelet count in case 2 was most gratifying in view of the presence of subarachnoid haemorrhage on admission. Cerebral haemorrhage is a well-known cause of death in eclampsia, and it has been suggested that thrombocytopenia may play an important role in its pathogenesis.[4] Pritchard *et al.*[26] state that the haematological abnormalities undergo spontaneous correction after delivery and it is therefore not possible to attribute the recoveries to prednisone alone. It is clear, however, that prednisone should be given an extended trial to establish its efficacy.

SUMMARY

Two cases of eclampsia in hypertensive African women are described. In both cases the eclampsia was complicated by haemolytic anaemia, thrombocytopenia and uraemia. Recovery was associated with the use of prednisone in one case and the use of prednisone together with blood transfusion in the other.

The pathogenesis of eclampsia and these complications is discussed.

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PEPTIC ULCERATION IN THE AFRICAN OF DURBAN

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It is generally considered that peptic ulcer is uncommon in the African, although Gelfand[1] suggests that it may be commoner in the urbanised Native.

Three cases of duodenal ulcer in male Africans were recently (April 1957) diagnosed during a single week in the medical wards of this hospital, and this unusual occurrence prompted an examination of the incidence of peptic ulcer in the African in Natal, and comparison of these findings with those recorded for the African elsewhere in this continent.

Material

The admissions to the African medical and surgical wards (excluding orthopaedic wards) of King Edward VIII Hospital, Durban, during the 2-year period June 1955—May1957, have been analysed.

This hospital is the largest non-European hospital in Natal and serves mainly the non-European population of Durban and its environs. The smaller hospitals in Natal refer cases requiring major surgery and special radiological examinations to this centre and, in addition, many patients, by-passing their local hospitals, come of their own accord directly to this hospital for treatment. The majority of patients are derived from the Durban 'urban' population. An overwhelming majority of the Africans admitted are Zulus. Coloured patients do not attend at this hospital.

Incidence

During the 2-year period June 1955—May 1957, 25,135 male and 14,500 female African patients were admitted to the hospital. They all entered the wards *via* the out-patient or casualty departments, where an average of 7,000 male and 4,000 female medical and surgical patients are seen monthly. Only 27 proven cases of gastro-duodenal ulceration were found among the available records of in-patients—an incidence of 0·068% (0·68 per 1,000). In all these cases the diagnosis was proved radiologically after a barium-meal, or at operation, or both, and in 3 cases at autopsy.

During the same period 9 cases were classified as 'doubtful'. In 7 of these, the duodenal cap was found radiologically after a barium-meal, to be irritable or deformed, but ulcer craters were not demonstrated. In the remaining 2, gastric lesions were displayed, but distinctions could not be made between neoplastic and benign ulcers. One of these last 2 patients refused laparotomy and was discharged; the case notes of the other cannot be traced, and so the final diagnosis remains uncertain.

In addition, 3 cases of lower oesophageal ulceration were found, each in association with a sliding hiatus hernia. Two proven and 2 doubtful cases of duodenal ulcer were also found in male African out-patients who were not subsequently admitted to the wards.

One patient was admitted for a recurrent duodenal ulcer but, as the diagnosis was originally established before June 1955, he has not been included in this series.

Sex Incidence

Two duodenal ulcers were diagnosed in female patients—an incidence of 0·14 per 1,000 female admissions. The remaining 25 cases were all males, an incidence of 0·99 per 1,000 male admissions. The sex ratio in this series was therefore 12·5 males to 1 female. As the ratio of male to female admissions was 1·7 to 1, the corrected sex ratio was 7·4 males to 1 female. In addition to the above two cases, 2 cases of oesophageal ulcers, both associated with a hiatus hernia, were diagnosed in females.

Age Incidence

Most of the patients seen at the hospital calculate their age by reference to some historical event. Ages quoted can therefore only be accepted as approximations, and in the older subjects may be a decade more or less than that given.

The youngest patient was a male aged 19 years (duodenal ulcer); the oldest a male aged 70 years (gastric ulcer). The 2 female patients were aged 24 and 29 years respectively. In Table I the age incidence, in decades, of the proven cases in this series, is compared with that found by Erasmus[2] in Europeans at Cape Town. It is seen that among the Africans of Durban the maximum incidence occurs at a significantly younger age than among Europeans in Cape Town. It should be remembered, however, that the life expectancy of the African is much shorter than that of the European,[3] and it is possible that the low incidence of peptic ulceration in the older age-groups among Africans, is merely a reflection of this shorter life expectancy.

TABLE I. AGE INCIDENCE OF PEPTIC ULCERS IN THIS SERIES COMPARED WITH RECORDS FOR EUROPEANS

Africans			*Europeans*		
Age Period	*Present Series (1957)*		*Age Period*	*Erasmus's Series*	
10–19	1	}	Under 20	1	}
20–29	6	} 59% of total	21–30	12	} 29·2% of total
30–39	9	}	31–40	37	}
40–49	7		41–50	43	
50–59	3		51–60	50	
60–69	–		61–70	19	
70–79	1		71–80	8	
80–89	–		over 80	1	
Total	27		Total	171	

Site of Ulceration

Of the 27 proven ulcers, 22 were situated in the first part of the duodenum. The remaining 5 were situated on the lesser curvature of the stomach. One of these 5 was high up on the lesser curvature and the patient (a male aged 70 years) had, in addition, a sliding hiatus hernia. The radiological features in this case were those of a simple gastric ulcer; in 3 cases the ulcer was proved histologically to be benign; the remaining case (in a 25-year-old- male) presented as an acute perforation and, at operation, there was nothing to suggest malignancy.

Seasonal Incidence

The seasonal occurrence of cases in this small series was as follows:

	No. of Cases
Summer (November-January)	4
Autumn (February-April)	9
Winter (May-July)	8
Spring (August-October)	6

Thus, fewer patients with peptic ulcer were seen during the summer months than during the other seasons of the year, and the highest incidence was during the autumn and winter. No particular seasonal distribution was noted in the 5 patients who presented with acute perforations.

Presenting Symptoms and Signs

5 cases (18·5%) presented as acute perforations; 3 of these were anterior duodenal ulcers and 1 an anterior gastric ulcer, in males. One perforated anterior duodenal ulcer was seen in a female. In only 2 of these cases was any preceeding history of dyspepsia recorded.

Ten patients presented with haematemesis or melaena as the main symptom. Four were admitted after a severe haematemesis. In 2 of the latter, no previous history of dyspepsia was recorded; 1 patient gave a history of postprandial epigastric pain of 1 month's duration before hospitalization, and 1 had had a previous severe haematemesis 1 year before admission. One 36-year-old male patient died as the result of a massive haematemesis while undergoing treatment for chronic malnutrition, the presence of a chronic duodenal ulcer (proved at autopsy) not having been suspected clinically. One patient had had repeated small haematemesis over a period of 2 months and another, who gave a past history of epigastric pain of 8 years duration, for which he had not previously sought medical advice, vomited 'a cupful of blood' 3 days before his attendance at the hospital.

In 3 cases the main symptom was melaena. One patient died shortly after admission from a severe gastro-intestinal haemorrhage; a 2-year history of 'constant upper abdominal pain with recent increase in severity' was recorded. The remaining 2 patients each presented with a story of having passed a melaena stool, and a past history of postprandial

pain, relieved by food, a duration of 1 month and 9 months respectively.

All the patients in whom bleeding occurred were males—9 from duodenal ulcers and 1 from a gastric ulcer.

The remaining 12 patients presented with histories suggestive, to varying degrees, of peptic ulcers. The recorded duration of symptoms varied from 5 days to 12 years. Case records were unfortunately incomplete, and a detailed analysis of symptomatology was therefore not undertaken.

DISCUSSION

Comparative Incidence in Various Parts of Africa

Perhaps because of the relative rarity of this disease in Africans, the incidence of peptic ulcer among these people has received little attention. Reference to the literature reveals no statistics for the African in Natal.

Beyers[4] was able to find only 4 cases (1 gastric ulcer and 3 duodenal ulcers, all in males) in 18,000 hospital inmates at the Johannesburg non-European Hospital during the years 1921-26.

Eagle and Gillman[5] in a series of autopsies at the Medico-Legal Mortuary, Johannesburg, found only 8 peptic ulcers in 8,328 cases necropsied, during a 10-year period, July 1928-August 1937, while 5 peptic ulcers (all in males) were found among 1,144 autopsies performed at the Johannesburg General Hospital, during the 9-year period 1927-35.

More recently, Charlewood and Frylinck[6] reported 94 cases of peptic ulcer in 103,618 admissions to the Johannesburg non-European teaching hospitals, during the years 1943-48 (an incidence of 0·09%), and 29 cases in 30,434 admissions to the Baragwanath Hospital for non-Europeans, Johannesburg, during 1948-49 (an incidence of 0·095%). The incidence among hospitalized Europeans between 1945 and 1949, reported by the same authors, was 1·3% (1,033 cases in 78,328 admissions to the Johannesburg General Hospital for Europeans. Unfortunately, the sex incidence was not recorded by these authors, nor was the site of ulceration or seasonal incidence stated.

Erasmus[2] (1955) in a series of 356 consecutive cases of gastro-duodenal ulceration and neoplasm, among *all* races, at Groote Schuur Hospital, Cape Town, found only 3 ulcers (all duodenal) in Bantu patients. The ratio of admissions of European and Coloured patients to Bantu was 9 to 1.

The incidence of peptic ulcer in the African in Natal, as found in this series (0·068%) is thus lower than that described for the Bantu of Johannesburg (0·09% and 0·095%). This incidence is significantly lower than that among Europeans in South Africa (1·3%), as well as that recorded for the Africans of Nigeria, among whom Joly[7] recorded an incidence of 4·6% in 2,543 patients admitted to Adeoyo Hospital, Ibadan, during 1950-53.

Sex Incidence

The few statistics available on the incidence of peptic ulcers in the African indicate that the condition is extremely rare in females. Thus neither Beyers[4] nor Erasmus[2] encountered a single female case; Eagle and Gillman[5] quoted a male to female ratio of 2 to 1 (based on a post-mortem series of 8 cases). Ellis[8] in the Natives of Nigeria, found 12 duodenal ulcers among females in 124 cases, a male to female ratio of 9·3 to 1. Ellis's figures agree with those of Aitken[9] who in 1933, also from Nigeria, reported 4 female cases in 48. Joly,[7] at Ibadan, Nigeria, found 26·7% of 116 cases of duodenal ulcer to occur in females, a male to female ratio of 3·7 to 1. The sex ratios calculated on the latter 3 authors' figures do not take into account the relative sex distribution of the total number of hospital admissions among whom the peptic ulcers were diagnosed.

The sex difference in the present series (12·5 males to 1 female) would appear to confirm the impression that peptic ulceration is extremely rare in the African female. However, if, as previously indicated, corrections are made for the discrepancy between the number of male and female patients admitted to this hospital, the sex ratio then becomes 7·4 males to 1 female, an incidence among females lower than that described in Africans by Eagle and Gillman[5] and Joly,[7] and higher than that described by Ellis[8] and Aitken.[9]

Location of Peptic Ulcers

Five gastric ulcers were diagnosed in the present series (18·5%)— a ratio of 1 gastric to 4·4 duodenal. Beyers[4] found 1 gastric ulcer in 4 African patients with peptic ulcers. Erasmus[2] did not find any gastric ulcers in Africans in his series of 356 consecutive cases of gastro-duodenal ulceration and neoplasm, among all races, at Groote Schuur Hospital, Cape Town. In Nigerian natives, Joly[7] (116 cases) and Konstam[10] (20 cases) failed to detect a single instance of gastric ulcer, all patients studied by them being diagnosed as suffering from duodenal ulcer; Ellis[8] found only 1 gastric ulcer among 128 African cases. Table III compares the above figures in Africans with those of Jones and Pollak[11] and Jamieson, Smith and Scott[12] for Europeans in Great Britain, and of Joly[7] for Negro patients in New Orleans and Chicago.

Thus, excluding Beyers' small series,[4] gastric ulcers were found more frequently in this series of African cases, than has previously been reported in Africans by others.

TABLE II. COMPARISON OF FREQUENCIES OF DUODENAL AND GASTRIC ULCERS, AND SEX INCIDENCE OF ALL ULCERS

Author	*Race*	*Place*	*Date*	*Site of Ulcer*			*Sex Ratio M/F*
				Gastric	*Duodenal*	*Ratio G/D*	
Present Series	African	Durban	1957	5	22	1/4·4	12·5/1
Beyers	African	Johannesburg	1927	1	3	1/3	4/0
Ellis	African	Nigeria	1948	1	123	1/123	9·3/1
Joly	African	Nigeria	1956	0	116	—	2·7/1
Konstam	African	Nigeria	1954	0	20	—	3/1
Jones and Pollak	European	London	1945	271	623	1/2·5	4·7/1
Jamieson, Smith and Scott	European	Glasgow	1949	358	2,763	1/7·7	3·5/1
Joly	Coloured	New Orleans	1956	278	718	1/2·6	—
Joly	Coloured	Chicago	1956	22	170	1/7·7	—

Presenting Features: Problems of Diagnosis

The high percentage (55·5%) of patients in this series, presenting with one or other complication of peptic ulceration, was unusual. Beyers[4] recorded 1 perforated gastric ulcer among his 4 cases. Eagle and Gillman[5] recorded 2 duodenal perforations in their post-mortem series of 8 cases. Joly[7] saw 2 duodenal perforations and 1 case of haematemesis in 116 cases in Nigeria. Of Ellis's 123 cases of duodenal ulcer, 3 presented as acute perforations and only 3 patients reported having vomited blood.[8] Perforation in the African in Southern Rhodesia is apparently uncommon, judging from Frazer Ross's report of a single case of perforated duodenal ulcer which occurred in an African female in his area.[13]

There are many factors, probably responsible each to a varying degree, for the high complication rate seen in patients at this hospital. Because the hospital is overcrowded only the more urgent cases are usually admitted. Thus, many patients complaining of epigastric pain are of necessity treated empirically as out-patients, without full investigation. The pain caused by an uncomplicated peptic ulcer may be temporarily relieved, but the ulcer is not 'cured'. The majority of such patients will eventually return to this hospital, either because of recurrence of the same symptoms or because of one or other complication which might, in the interim, ensue.

The clinical diagnosis of peptic ulcer depends essentially upon an accurate history and this is difficult to obtain, through an interpreter, from our African patients, most of whom do not speak English. This difficulty is still greater in the overcrowded out-patient department of this hospital. An inaccurate history, especially in this Natal hospital where amoebic liver abscesses are so commonly seen, undoubtedly has the result that some patients with peptic ulcers, presenting with abdominal pain alone, are diagnosed as suffering from amoebic liver abscess and are treated for that condition. Thus, of the 12 patients in this series (ultimately proved to be suffering from peptic ulcer), who presented with epigastric pain but without symptoms of any complication, 7 had in fact been given a full course of anti-amoebic therapy before the correct diagnosis was established. Four of these patients had received more than one course of anti-amoebic therapy. In one of them, before the correct diagnosis of duodenal ulcer was established he had been admitted on 5 different occasions, and on each occasion had received a full course of anti-amoebic therapy. In none of the above patients was there any record that *E. histolytica* had been isolated from the stool, and if the criteria for the diagnosis of amoebic liver abscess, as advanced by Lamont,[14] are carefully applied no patient in this series can be considered to have suffered from amoebic liver abscess.

The cultural background of the Zulu, to which race most of our patients belong, is such as to encourage an element of stoicism from an early age. It is conceivable, therefore, that the pain threshold of many of our patients may be higher than in his European counterpart. This may be responsible, at least in part, for delay in seeking medical advice and hence a greater likelihood of complications supervening. Thus, 12 patients in this series gave a history of epigastric pain of 2 years' duration or longer; 5 of these patients presented with one or other complication of peptic ulceration.

Some aspects of aetiology in the Durban African

Both the aetiology and pathogenesis of peptic ulcers have been discussed at great length in the literature[15,16,17] and many factors are known or thought to play a part. To give preference to any single aetiological factor from the findings in the present small series is obviously not justifiable. However, several observations in 4 patients that I was personally able to interview and examine strongly support the possibility that, at least in these 4 subjects, psychosomatic factors[15,18] were of considerable importance in the aetiology of their duodenal ulcers. This seems to be indicated by the histories elicited from them, here briefly recorded.

CASE RECORDS

Case 1

An intelligent, married, 29-year-old, English-speaking African male, who had passed standard VII at the age of 17 years, was admitted complaining of postprandial epigastric pain, relieved by food, present without remission for 8 months. Before admission he had been given 2 full courses of anti-amoebic therapy, with no relief of symptoms. Barium-meal examination at this stage revealed no abnormality, but he responded to an 'ulcer regime' and so he was discharged with a provisional diagnosis of duodenal ulcer. He was readmitted 10 weeks later with a history of recurrence of pain (he had stopped taking alkalis) and 3 attacks of fainting during the preceding 3 weeks, each attack being followed a few hours later by the passage of a melaena stool. Repeat barium-meal examination revealed a duodenal ulcer.

Social History. He has been a storeman at a radio shop for 9 months, and is solely responsible for several thousand pounds' worth of stores and equipment. He admitted that the responsibility worries him considerably. His symptoms first appeared a few weeks after he commenced this job. Earns £15 per month.

Case 2

An intelligent, single, 24-year-old English-speaking African male. Complained of acute continuous burning epigastric pain for the past 6 days, and postprandial vomiting for 3 days. No previous history of any apparent relevance. Barium-meal examination revealed a large duodenal ulcer at the base of the duodenal cap.

Social History. Constable in South African police force for 8 years. Earns £21 per month. Passed standard V at the age of 16 years. This patient seemed particularly introspective, apprehensive, and anxious to leave hospital. He was discharged after 3 weeks' hospitalization because it was felt that confinement was doing more harm than good.

Case 3

An intelligent, unmarried, 40-year-old African male. Three days before admission he vomited a cupful of blood, and then fainted. For 2 days after this he noticed that his stools were 'pitch black'. There was no associated abdominal pain. He had been experiencing burning epigastric pain, unrelated to meals, for 8 years. The pain sometimes occurred at night. Barium-meal examination revealed a duodenal ulcer.

Social History. Able to read and write English but had never been to school. Domestic worker earning £6 10s. 0d. per month, plus board and lodging. His employer, a doctor, stated that he was an intelligent, extremely conscientious man, and had recently been worrying a great deal about a young nephew, whom he was fostering and who had recently started mixing with 'bad company'. The patient readily admitted this and persisted in asking to be discharged so that he could return to his home to care for the boy.

Case 4

A 46-year-old Zulu-speaking African male. Admitted for resuscitation after a massive haematemesis. He had been treated for a similar episode 1 year before at another hospital. Following the first episode of haematemesis he began to experience a burning epigastric pain, not related to food but which was relieved only by self-induced vomiting. A barium-meal examination revealed a duodenal ulcer.

Social History. Unable to speak English and had had no schooling. Head policeman at an African male compound on the Natal South Coast, and solely responsible for maintaining order among the 100-odd inmates. Earns £4 per month plus board and lodging. Denied any possible cause for worry or anxiety but was nevertheless anxious to be discharged and return to work. His employer stated that he was a reliable and conscientious man and that, in his opinion, the post was a very responsible one.

Thus, 3 of these 4 patients spoke English and were to some degree educated. All 4 were interested in their illness and were anxious to be discharged as soon as possible so that they could return to work. This is in marked contrast to the majority of the patients in this hospital, who speak only Zulu, have had no schooling at all, seem to be rather uninterested in their illnesses, and are usually prepared to remain in hospital for as long as the medical authorities deem necessary.

In only 2 of these 4 patients (cases 1 and 3) could an obvious cause for anxiety be detected. All 4 patients earned what is, in comparison with the average patient seen at this hospital, a 'high' wage. The majority of male patients seen at this hospital earn less than £5 per month and also have to find and pay for their own lodgings and provide their own food.

Neither Konstem[10] nor Ellis[8] considered psychosomatic factors to be of aetiological significance in any of their patients in Nigeria, but favoured some dietary deficiency. I am unable to quote any data for or against their theory, as applied to the South African Bantu, but the fact that the Bantu in South Africa far more commonly suffers from frank or sub-clinical malnutrition than the European, together with the much higher incidence of peptic ulcer in the latter,[6] would argue against any specific dietary *deficiency* as playing a major aetiological role in the production of peptic ulcers in the South African Bantu.

How large a part psychosomatic factors play in the aetiology of peptic ulcer in the African in Durban is impossible to assess until a larger series of cases is recorded. Investigation into the degree of so-called 'westernization' of Africans in the Union who are found to be suffering from peptic ulceration should have an interesting bearing on the aetiology of gastric and duodenal ulcers. In particular, their type of employment, income, dietary habits, and some objective assessment of personality type and similar information about a possible 'African ulcer diathesis', should be considered. The incompleteness of the records in the present series precludes such an analysis.

SUMMARY

1. The incidence of peptic ulceration in the African in Natal (0·68 per 1,000) as reflected in the analysis of 39,635 admissions to King Edward VIII Hospital, Durban, during the 2-year period June 1955 to May 1957, is recorded and compared with other available figures for Africans in other parts of this continent.

2. The younger age incidence of this lesion among Africans as compared with the European, is noted.

3. The sex distribution of cases (12·5 males to 1 female) and the high complication rate (55·5%) in the present series of 27 proven cases is recorded and discussed. In the light of the frequency of incorrect diagnosis among cases in the present series the importance is stressed of considering peptic ulcer in the differential diagnosis of amoebic liver abscess, especially in Natal.

4. The possible part played by psychosomatic factors in the aetiology of peptic ulcer in the African is discussed; the case histories of 4 patients are quoted in support of this possibility.

I would like to thank Prof. T. Gillman, Professor of Physiology, University of Natal and Dr. N. Lamont, who rendered helpful advice in the preparation of the manuscript; Dr. S. Disler, Medical Superintendent of King Edward VIII Hospital, for permission to publish figures and case records; and Prof. E. B. Adams, Professor of Medicine, University of Natal, and Dr. N. Pooler, for permission to examine patients admitted to their services in this hospital.

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CONGENITAL BILATERAL TOTAL EXTERNAL OPHTHALMOPLEGIA COINCIDENT WITH OTHER DEVELOPMENTAL ABNORMALITIES

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The following case is considered worthy of report as it presents an unusual combination of congenital abnormalities.

CASE REPORT

S.F., a Coloured female aged 17 years, was admitted to Baragwanath Hospital on 7 August 1956. According to her mother she had been unable to open her eyes properly since birth; she could not see well with her right eye, but vision in the left eye was normal. The mother had never noticed any squint, nor had the patient complained of diplopia. It was further stated that the patient had been born with a protruding chest. Her milestones with regard to mental development were normal. Menstruation started at the age of 15 years and was normal. There was no history of past illness.

The patient was the last of 6 siblings and was born after a normal pregnancy and labour. There was no history of congenital abnormalities in other members of the family. We examined 40 immediate relatives and found no obvious congenital abnormalities.

Examination

The patient was of normal intelligence and showed no disorder of affect, behaviour or speech. Her measurements were: height 59 inches, span 66 inches, floor to pubis 32 inches. She stood with her head thrown back, the sternomastoid and trapezius muscles prominent. The dorsal spine was the seat of a marked lordosis in its middle portion and was associated with forward protrusion of the thorax (Fig. 1). The cervical spine was normally mobile but the rest of the vertebral column was rigidly fixed. Her gait was normal and her agility surprising in view of the severity of the spinal deformity. The lobes of both ears were vestigial and were joined to the neck by a fold of skin.

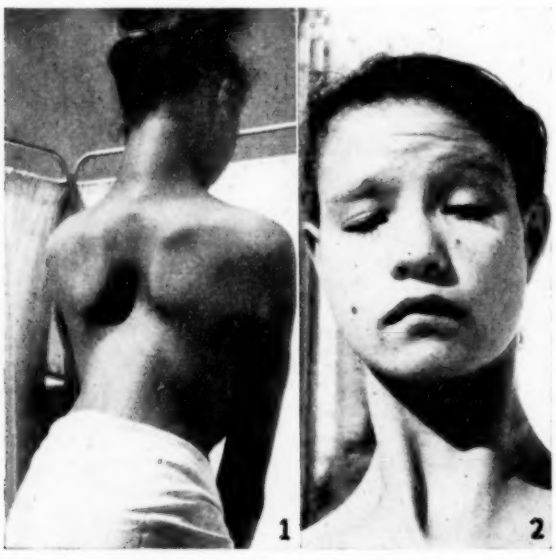

Fig. 1. The lordotic deformity of the thoracic spine.
Fig. 2. The bilateral ptosis, compensatory contraction of occipito-frontalis muscle and prominent sterno-mastoid muscles.

Bilateral ptosis was present, reducing the palpebral fissures to mere slits. Compensatory contraction of the frontalis muscle was well in evidence. The eyeballs were fixed in the straight-forward position, no movement being possible in any direction (Fig. 2). There was no response to 1·5 mg. prostigmine by intramuscular injection. The pupils were round and equal, reacting to light but failing to contract on accommodation. Visual acuity of the left eye was normal, while that of the right eye was poor (6/36 Snellen's types). The visual fields and colour vision were normal. On retinoscopy the patient was astigmatic and myopic. The right optic disc was transversely elliptical and appeared to be enlarged. The lateral half of the disc was irregularly pigmented with numerous small blood vessels ramifying over its surface. Fundoscopy of the left eye was normal. The remaining cranial nerves were normal, as was the rest of the central nervous system on examination. Pubic and axillary hair were scanty but breast development was satisfactory. Examination of the heart, lungs, abdomen and urine was normal.

Radiological Findings (Dr. A. Berezowski)

Skull: The vault is rather small and presents a beaten silver appearance probably consistent with the patient's age. The pituitary fossa is normal in size and no intracranial calcification is seen. Platybasia is noted.

Cervical Spine: There is a spine bifida of C4 and fusion of the posterior elements of C5 and C6. The appearances are consistent with a Klippel-Feil type of abnormality.

Dorso-lumbar Spine (Fig. 3): Most of the bodies are rather longer than broader. There is fusion of the rib elements posteriorly as well as of most of the dorsal elements of the vertebral bodies in the thoracic region. This has resulted in a marked lordosis of the mid-dorsal spine. The vertebral bodies in this region are very small.

Lumbar Spine: There is rotational scoliosis convex to the right. An opacity, 0·5 cm. in diameter, lying between D12 and L1 on the left side probably represents an unusual ossification centre.

Pelvis: There is some asymmetry caused by maldevelopment of the left hemipelvis.

Laboratory Investigations

Haemoglobin 14·8 g.%. Paper electrophoresis revealed no abnormal haemoglobins. Leucocyte and differential counts were normal. Blood group O, Rh-positive, cDe, MNS. Standard Eagle test negative. The blood urea and carbon-dioxide-combining power normal; plasma chloride, cholesterol, inorganic phosphorus normal; serum sodium, potassium, calcium and bilirubin normal. Alkaline phosphatase 6·4 units (King-Armstrong). None of the following substances were detected in the urine: pentose or other reducing substances, porphyrins, homogentisic acid, amino acids in excess. pH of urine 6·3.

DISCUSSION

Giri[1] has summarized the main features of congenital paralyses of the ocular muscles as follows: 'Ptosis is the com-

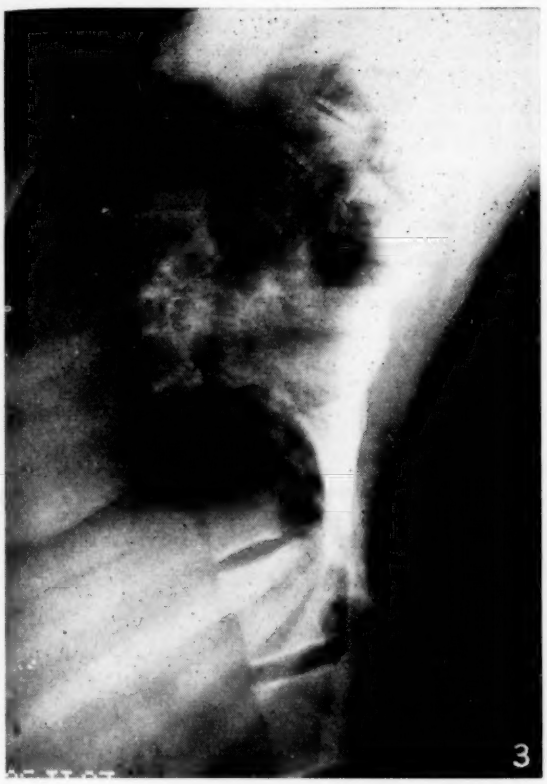

Fig. 3. X-ray of dorso-lumbar spine showing the lordosis and abnormalities of the vertebrae.

monest. Next come paralyses of one or more muscles either in conjunction with or independently of ptosis, affecting the two eyes similarly or differently, some of the muscles having preserved their function either partially or completely. The affection may be unilateral or bilateral. Divergent or convergent squint is often present. Errors of refraction have been noted in most cases. Almost total bilateral ophthalmoplegia externa with ptosis appears to be the least common'.

Complete bilateral ophthalmoplegia externa occurs sporadically or may be inherited either as a Mendelian dominant[2] or as a sex-linked recessive.[3] The theories advanced to explain the anomaly have invoked either a nuclear or a muscular defect. Moebius[4] attributed the condition to aplasia of the nuclei in the brain stem while Langdon and Cadwalader[5] reported a diminution in the number and shrinking of the cells of all the oculomotor nuclei except the Edinger-Westphal nuclei. Uthoff[6] suggested that a congenital defect in the anlage of the ocular muscles was responsible for the anomaly. Fuchs,[7] on the basis of biopsy studies, believed that the condition represented a myopathy of the extra-ocular muscles.

In the case described above the following points call for comment. The failure of the pupils to contract on accommodation has been attributed to myopia and the inability to converge.[3] Both the pigmentation of the optic disc and the vascular malformation of the retinal vessels are developmental defects which may cause visual impairment[8] and probably explain the poor vision in the patient's right eye.

This case was remarkable for the multiplicity of developmental abnormalities involving the axial skeleton. Thus there was a platybasia, a Klippel-Feil deformity of the cervical vertebrae, asymmetry of the pelvis and a dysplasia which resulted in a severe lordosis of the dorsal spine and the total loss of mobility of the vertebral column below the cervical region. The association of congenital bilateral total external ophthalmoplegia with other developmental anomalies, such as spina bifida and cardiac and thoracic malformations, was also noted by Salleras and de Zarate in their sex-linked recessive cases.[3]

SUMMARY

A case is reported of congenital bilateral total external ophthalmoplegia associated with other developmental anomalies involving particularly the axial skeleton.

We wish to thank the Medical Superintendent of Baragwanath Hospital for permission to publish this case, Dr. K. Keeley for his advice on the investigation of the case, Dr. J. Rom for the ophthalmological examination and Dr. S. Kimmel and Mr. A. Shevitz for the photographs.

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IN MEMORIAM

OTTO POPPER, M.B., CH.B. (EDIN.), F.R.C.S. (EDIN.)

Dr. Gerald M. Fox, of Johannesburg, writes: Dr. Otto Popper, senior surgeon of the E.N.T. Department at the Transvaal Memorial Hospital for Children, died at his home in Dunkeld, Johannesburg, on 14 August at the age of 58.

Otto Popper was born in South Africa and educated at St. John's College, Johannesburg. He studied medicine at Edinburgh University, graduating M.B., Ch.B., in 1922. Following house appointments in Edinburgh, Hull and Nottingham, he studied diseases of the Ear, Nose and Throat with Professor Neumann in Vienna. He was elected F.R.C.S. Edinburgh in 1925. Relinquishing a staff appointment at the Bristol Royal Infirmary, he commenced consulting practice at Nottingham and Wimpole Street, London. He was of an inventive turn of mind, and during his stay in England, designed, among other instruments, a suction dissector, a bronchoscope with proximal lighting, and an adenotome, the last being as widely used today as it was when first invented.

Dr. Otto Popper

In 1931 he returned to South Africa and soon acquired a successful otorhinolaryngological practice. He contributed to the leading E.N.T. journals, and his articles had a lucid and literary style not commonly found in technical writing. Stimulated by Lempert's fenestration for otosclerosis, he sought an easier gateway to the labyrinth, and in 1946 published in the *Journal of Laryngology and Otology* his 'Transtympanic Fenestration'.

Three years later, he was invited to the Americas, to the Scandinavian Countries, to England and to France to lecture and to demonstrate. He accepted these invitations, as he did all things, with appreciation and zest. He was a man of culture, wide interests and great enthusiasm.

The sympathy here expressed to his wife, Dr. Evelyn Popper, and their children, will be echoed much further afield.

Dr. W. A. Kerr and Dr. D. H. Klugman, of Johannesburg, write: Mr. Oswald Otto Popper, whose lamented death occurred on 14 August, was educated at St. John's College and the South African School of Mines and Technology, Johannesburg. He graduated as a doctor at Edinburgh University in 1922 and became a Fellow of the Royal College of Surgeons of Edinburgh in 1925. He also did postgraduate work in Vienna, Berlin and Paris and served on the staff of the Bristol General Hospital and the Queen's Hospital for Children, the Royal Ear Hospital and University College Hospital in London.

For many years after his return to South Africa he acted as Head of the Aural Departments of the Krugersdorp and the Far East Rand Hospitals and was a member of the Aural Department of the Johannesburg Hospital in 1939. He rejoined the honorary staff of the Johannesburg Hospital in 1944 and in 1950 he was appointed to the part-time post of Senior Aural Surgeon. He served at the Transvaal Memorial Hospital for Children until his death.

He was associated with the University of the Witwatersrand for many years, more particularly in the Departments of Anatomy and Surgery and during this period he elaborated a technique in aural surgery known as the 'transtympanic approach', which received support in Scandinavia, France, South America and the United States of America, as well as other European countries. As a research worker he designed many surgical instruments and made many contributions to the field of aural surgery. He gained an international reputation in 1948, when he was invited to lecture on his fenestration operation for deafness in the United Kingdom, the United States of America and other countries.

Mr. Popper is survived by his wife, Dr. Evelyn Popper, a son and three daughters; to them we extend our sincere sympathy in their irreplaceable loss.

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Wirz, B. Exorcism and the art of healing in Ceylon. Leiden. Brill. 1954.

PASSING EVENTS : IN DIE VERBYGAAN

Dr. Harry Ulman, Johannesburg. The new telephone number of Dr. Harry Ulman, M.B., B.Ch., M.R.C.O.G., Gynaecologist and Obstetrician, is Johannesburg 42-1261. This number is not listed in the current telephone directory.

* * *

Training in Psychiatry at McGill University. Attention is directed to the reference on page XVI of this issue to a diploma course and other courses in Psychiatry at the McGill University, Montreal. Associated with these courses are honoraria and bursaries, and applications for openings for next year are now being considered. Applicants should write to the Chairman of the Department of Psychiatry, McGill, University, Montreal, Canada.

* * *

The American College of Chest Physicians is offering three cash awards to winners of the 1958 Prize Essay Contest, open to undergraduate medical students throughout the world for essays on any phase of the diagnosis and treatment of Chest Diseases (heart and/or lungs). The awards are $500, $300, and $200. The contest closes on 15 April 1958. For application and further information contestants should write to American College of Chest Physicians, 112 East Chestnut Street, Chicago 11, Illinois, USA.

* * *

Members are reminded that they should notify any change of address to the Secretary of the Medical Association of South Africa at P.O. Box 643, Cape Town, as well as to the Registrar of the South African Medical and Dental Council, P.O. Box 205, Pretoria.

Failure to advise the Association can only result in non-delivery of the *Journal*. This applies to members proceeding overseas as well as to those who change their addresses within the Union.

* * *

Southern African Cardiac Society. At the first National Meeting of the Southern African Cardiac Society, held at the Haining Hall, Durban, on 20 September 1957, the following members were elected as national office-bearers: *Chairman*, Dr. Maurice Nellen; *Secretary*, Dr. Louis Vogelpoel; *Treasurer*, Dr. Velva Schrire. The meeting also agreed that the Provincial sections will rotate every 2 years with regard to national office-bearers.

It was agreed to that the transactions of the meetings of the Provincial sections be published in fairly full form in this *Journal*.

* * *

The International Federation of Gynaecology and Obstetrics was founded in Geneva in 1954, where it held its First World Congress. Meeting every 4 years, according to its constitution, the International Federation chose Montreal, Canada, as the site of its *Second World Congress*, which is to be held on 22-28 June, 1958. All scientific sessions, scientific exhibits and moving pictures will be held in the newly-built Queen Elizabeth Hotel. The main features will be plenary conferences with invited guest speakers, round-table discussions, and free communications. Information and registration forms may be obtained by writing to the Montreal Committee, Second World Congress, International Federation of Gynaecology and Obstetrics, 1414 Drummond Street, Suite 220, Montreal 25, Quebec, Canada.

* * *

Federal Council. At the Federal Council meeting held in Durban on 11 September the Executive Committee was constituted as follows: *Ex-Officio members:* Dr. H. Grant-Whyte (President), Dr. J. H. Struthers (Chairman of Council), Dr. E. W. Turton (Deputy Chairman), Dr. A. W. S. Sichel (Immediate Past Chairman), Dr. J. D. Joubert (Hon. Treasurer). *Elected members:* Dr. B. A. Armitage (Natal Inland Branch), Dr. J. A. Currie (Cape Western), Dr. Lewis S. Robertson (Southern Transvaal), Dr. R. Schaffer (Border), Dr. R. Theron (O.F.S.). The list published on page 967 of the *Journal* of 21 September was incorrect.

In the published list of members elected to the Central Com-

mittee for Contract Practice the name of Dr. L. O. Vercueil (Southern Transvaal Branch) was omitted. Dr. Vercueil has since been elected chairman of this Committee.

Dr. J. D. Joubert was re-elected as Treasurer and Dr. A. H. Tonkin as Secretary of Federal Council.

* * *

The new office-bearers of the National General Practitioners Group are as follows:

Chairman: Dr. W. A. M. Miller; *Vice-Chairman:* Dr. W. H. Lawrance and Dr. E. W. S. Deale; *Hon. Secretary:* Dr. L. Levy.

Office bearers in the various areas are as follows:

Southern Transvaal Sub-group: Chairman, Dr. G. W. Schepers; Vice-Chairman, Dr. R. C. de Kock; Sec./Treas., Dr. S. J. Lachman.

Northern Transvaal Sub-group: Chairman, Dr. W. H. Lawrance; Hon. Sec., Dr. S. Donen.

Cape Western Sub-group: Chairman, Dr. George Paterson; Vice-Chairman, Dr. Charles Shapiro; Hon. Sec., Dr. Norman Levy; Asst. Sec., Dr. Sydney Kiel; Hon. Treas., Dr. Morris Helman.

Natal Coastal Sub-group: Chairman, Dr. R. Mundy; Sec./Treas., Dr. D. Martyn.

* * *

Union of South Africa. Department of Health. Notification of formidable epidemic diseases and poliomyelitis in the Union during the period 20-26 September 1957.

Poliomyelitis

	Eur.	*Nat.*	*Col.*	*As.*	*Total*
Transvaal	2	–	–	–	2
Cape Province ..	1	2	2	–	5
Orange Free State ..	–	–	–	–	–
Natal	1	–	–	–	1
Totals	4	2	2	–	8

Plague, Smallpox, Typhus Fever: Nil.

REVIEWS OF BOOKS : BOEKRESENSIES

SIR WALTER M. FLETCHER

The Bright Countenance—A Personal Biography of Walter Morley Fletcher. By Maisie Fletcher. Pp. 351. 11 Illustrations. 25s. net. London: Hodder and Stoughton. 1957. Local Sales Agent: Howard B. Timmins, 109 Long Street, Cape Town.

Contents: Author's Introduction. Foreword by the late M. R. James. I. The Early Years, 1873/1891. II. Trinity College, Cambridge, 1891/1901. III. Burnside and the Croppers. IV. Engagement. 1902/1904. V. 18, Brookside, 1904/1907. VI. Burrells Field, 1907/1914. VII. 93, Bedford Gardens, 1914/1919. VIII. 18, Campden Hill Gardens, 1919/1924. IX. 15, Holland Street, 1924/1927. X. The Indian Commission, 1927/1928. XI. 15, Holland Street, 1928/1930. XII. The Last Three Years (1), 1930/1931. XIII. The Last Three Years (2), 1931/1933. XIV. 'It's All Right'. *Supplement to the Life of Sir Walter Fletcher*, contributed by Sir Arthur MacNalty, K.C.B. I. Research Work in Physiology. II. The Medical Research Committee. III. The Medical Research Committee in War. IV. The Medical Research Council. V. Special Features of the Work of the Medical Research Council. *Appendices.* 1. (*a*) Sir Walter Fletcher: Bibliography. (*b*) Obituaries and Appreciations. 2. Academic and Other Distinctions. Index.

This biography, as the author, Sir Walter's widow, says, began as a family record particularly intended for his grandchildren. To them no doubt, it has far more appeal than to his scientific and administrative contemporaries. It covers more or less adequately the main features of his life, but it would be greatly improved if it included far fewer extracts from the author's diary which, too often, are incredibly trivial. The same criticism could be applied to the selection of passages from Fletcher's letters.

By far the most informative parts of this book are the foreword by Dr. M. R. James, the supplements by Sir Arthur MacNalty, and the obituaries and appreciations in the appendices which pay tribute to his distinguished career as a research worker and to his outstanding administrative services as secretary for 20 years to the Medical Research Council.

A.D.S.

PLASTIC SURGERY

The Principles and Art of Plastic Surgery. Volumes 1 and 2. By Sir Harold Gillies and D. Ralph Millard Jr. Pp. xxi + 317. With illustrations. £12 10s. + 3s. 10d. postage. London: Butterworth & Co. (Publishers) Ltd. South African Office: Butterworth & Co (Africa) Ltd., P.O. Box 792, Durban. 1957.

Content : Volume 1: Foreword by Jerome Pierce Webster, M.D. Acknowledgments. Preface. Prologue. I. *The First Act*—Cinderella Surgery. 1. World War One. 2. Principles. 3. Anaesthesia. 4. Technical Tips. 5. Skin Grafting. 6. Inlay Grafting. II. *Flap Happy*. 7. Rotation Flaps. 8. Direct Flaps. 9. Tube Pedicles. 10. Lymphoedema. 11. Forehead Flaps. 12. Pigmented Naevus. 13. Haemangioma. 14. Radiation Burns. 15. Cancer. 16. Ear Making. *Volume* 2: 17. Harelip and Cleft Palate. 18. Rag Bag. 19. Genitalia. 20. Reduction and Aesthetic Surgery. 21. World War Two and Rooksdown House. 22. Burns. 23. An Aspect of Hand Surgery. 24. Lip Trauma. 25. Surgery of the Mandible. 26. Surgery of the Maxilla. 27. Fractures of the Malar-Zygomatic Compound. 28. Nasal Fractures. 29. Frontal Defects. 30. Eyelids and Sockets. 31. Facial Paralysis. 32. Cross-Grafting. 33. A Day in Clinic. Epilogue. Biographical Data. Index.

This is a monumental work, a text-book of Plastic Surgery interwoven with the autobiography of a surgeon who well merits the title of 'Father of Plastic Surgery' which he has so long held.

There are no stereotyped classifications or second-hand opinions here; the authors take us through 50 years of experience with the informality of a clinical discussion leavened throughout with humour. In it, Sir Harold is nobly supported by Dr. Millard, his American Boswell, who showed the same pleasing witty style in his *Plastic Peregrinations*, and his articles on his Korean experiences. The attractive format of the books is probably due largely to his influence. Most happy, too, is the placing of the photographs and diagrams on the same page as the text to which they are relevant; this obviates irritating paging backwards and forwards in correlating the two.

Let us not be deceived by the ease of reading. When one attempts to summarize the techniques used and proposed, one begins to realize the wealth of experience, the vivid imagination, and the flood of original ideas, which have kept the senior author in the forefront for so many years.

No plastic surgeon of any standing should be without these volumes, and they should be read by surgeons in allied fields.

D.S.D.

RECENT EPIDEMICS

Recent Outbreaks of Infectious Diseases. By S. Leff, M.D., D.P.H. Pp. xii + 408. 2 Illustrations. £1 15s. net. London: H. K. Lewis & Co. Ltd. 1957.

Contents: General Introduction. Introduction: Virus Diseases. *Smallpox.* General Description. Edinburgh Outbreak. Glasgow Outbreak. Brighton Outbreak. Lancashire and West Riding Outbreak. General Summary. *Poliomyelitis.* General Description. Isle of Wight Outbreak. Guildford. *Q. Fever.* General Description. Royal Cancer Hospital Outbreak. College of Art, Canterbury, Outbreak. General Summary. *Psittacosis.* General Description. 1930 Outbreak. *Bornholm Disease.* General Description. Oxford, etc., Outbreak. *Enteric Fever: Typhoid Fever.* General Description. Bournemouth Outbreak. Croydon Outbreak. Aberystwyth Outbreak. *Paratyphoid Fever.* General Description. North Devon Outbreak. Eastbourne Outbreak. School Outbreak. *Food Poisoning:* General Description. *Salmonella Group.* General Description. Hospital Outbreak. Shropshire Outbreak. Northamptonshire Outbreak. *Staphylococcal Food Poisoning.* General Description. Factory Canteen Outbreak. Liver Sausage Outbreak. *Diphtheria.* General Description. Convalescent School Outbreak. Newcastle Outbreak. South Staffordshire Outbreak. *Lead Poisoning.* General Description. Rotherham Outbreak. *Atmospheric Pollution.* General Description. London Fog, 1952. *Index.*

This very interesting and readable book, which deals with recent outbreaks of infectious diseases, viral and bacterial, and also with the newer industrial menaces to life occasioned by atmospheric pollution, should be carefully studied by all who are interested in epidemiology. The details of the recorded infectious outbreaks are carefully set out and analysed and the lessons to be learnt

from them will be applicable to many future epidemics of a similar nature.

It is topical and germane that Dr. Leff has given so much space in this publication to psittacosis and the Coxsackie group of infections. Q fever has also been given due consideration and the recent views on this disease have received more than mention.

Few inaccuracies have been permitted to creep into the text, although we in South Africa would disagree with the statement that high rates for variola major are experienced here. It does, however, seem strange that no mention is made of the incidence of vaccinial encephalitis following the 1950 mass vaccination campaign in Glasgow where approximately 400,000 doses of vaccine were officially issued for use in this campaign.

The print and paper are excellent and the index sufficiently full and accurate.

I have no hesitation in recommending to all my medical colleagues, all health personnel, and others concerned with epidemiology, this excellent little treatise. Its reading and even re-reading will result in many additional lessons being assimilated which should find ready application in the event of like episodes occurring in their own locality.

E.D.C.

HUMAN CANCER

Human Cancer—A Manual for Students and Physicians. By Maurice M. Black, M.D. and Francis D. Speer, M.D., F.C.A.P. Pp. 273. 34 Figures. $7.50. Chicago: Year Book Publishers, Inc. 1957.

Contents: 1. Cancer Detection. 2. Human Carcinogenesis. 3. Biological Behaviour of Cancer. 4. Biochemistry of Cancer. 5. Chemical and Radiation Therapy. 6. Cancer of the Head and Neck. 7. Cancer of the Lung and Mediastinum. 8. Cancer of the Breast. 9. Cancer of the Gastro-intestinal Tract. 10. Cancer of the Liver, Biliary Tract and Pancreas. 11. Cancer of the Female Reproductive System. 12. Cancer of the Genitourinary System. 13. Cancer of the Soft Tissues and Retroperitoneum. 14. Cancer of the Skin. 15. Lymphomas and Allied Diseases. 16. Cancer of Bone. 17. Functional Tumors of Endocrine Glands. 18. Cancer in Infancy and Childhood. Index.

The authors of this small book have certainly achieved their object of producing a concise and systematic presentation of their subject; to cover all the important aspects of human cancer in less than 300 pages is no mean achievement.

Although one cannot whole-heartedly agree with their contention that 'even with the most scrupulous attention to the discovery of cancer at its earliest detectable stage, the majority of patients will not be appreciably benefited by current therapeutic measures', the impression is gained that throughout the book their evaluation of treatments is fair and points steadily to the need for earlier diagnosis and more efficient treatment.

The single chapter on treatment methods is perhaps not well balanced, about the same amount of space being devoted to X-rays as to 6 mercaptopurine, the mention of marrow depression and marrow aplasia following irradiation suggest unwise methods and should not be allowed to prejudice the reader against radiotherapy. The early chapters on the biological approach to the cancer problem are thought-provoking. All the chapters have excellent references as a guide to wider reading.

This is a book which provides a good bird's-eye view of Human Cancer and will be of value to student or practitioner needing an introduction to the subject.

M.B.B.

REGIONAL ANATOMY

A Synopsis of Regional Anatomy. Eighth Edition. By T. B. Johnston, C.B.E., M.D. Pp. viii + 450. 20 Plates and 19 Text-figures. 28s. net. London: J. & A. Churchill Ltd. 1957.

Contents: Section I.—The Upper Limb. Pectoral Region and Axilla. The Back. Scapular Region. Upper Arm. Front of Forearm. Palmar Aspect of Wrist and Hand. Back of Forearm and Hand. Joints of Upper Limb. *Section II.—The Lower Limb.* Front of Thigh. Medial Side of Thigh. Gluteal Region and Hip Joint. Back of Thigh and Popliteal Fossa. Front of Leg and Dorsum of Foot. Peroneal Region. Back of Leg. Sole of Foot. Joints of Lower Limb. *Section III.—The Thorax.* The Thoracic Wall. Pleurae and Lungs. Pericardium and Heart. Great Vessels, etc. Joints of Thorax. *Section IV.—The Abdomen.* Perineum. The Female Perineum. Abdominal Wall. Abdominal Cavity. Pelvis, in Male. Pelvis, in Female. Joints of Pelvis. *Section V.—The Head and Neck.* Front and Side of Neck. Dorsal Aspect of Neck and Trunk. Front and Side of Neck (continued). Median Line of Neck. Root of Neck. Scalp. Face. Temporal and Infratemporal Regions. Submandibular Region. Orbit and Middle Cranial Fossa. Prevertebral Region. Mouth and Pharynx. Nose. Larynx. *Section VI.—The Central Nervous System and Organs of Special Sense.* Introductory. Spinal Cord: Ascending Tracts, Descending Tracts. Brain: Medulla Oblongata and Pons. Cerebellum. Fourth Ventricle. Midbrain. Deep Connections of Cranial Nerves. Cerebrum. Thalami and Third Ventricle. Meninges. Auditory Apparatus. Internal Ear or Labyrinth. Eye. *Section VII.—Osteology.* Vertebral Column. Sternum and Ribs. Skull: Mandible, Hyoid Bone. Bones of Upper Limb. Bones of Lower Limb.

With 8 editions over a period of 36 years, Professor Johnston's compact text can be regarded as having acquired the status of a standard work, if not indeed of a classic. As to its quality, its author's repute as a teacher and as the present editor of *Gray's Anatomy* is sufficient testimony.

Professor Johnston makes it clear that he has designed his book not as an alternative to the conventional dissection manual, but as a revision text for the senior undergraduate or postgraduate student. As such, it would be difficult to better.

The development of surgery decade by decade imposes changes of view on the functional significance of anatomical facts. What was formerly academic knowledge may suddenly become vitally important; conversely, though less often, facts once stressed decline in practical importance. In revising this book, Professor Johnston has endeavoured to keep his presentation at least abreast of current surgical trends.

L.H.W.

CYTOLOGY OF EFFUSIONS

The Cytology of Effusions in the Pleural, Pericardial and Peritoneal Cavities. By A. I. Spriggs, D.M. (Oxon.), M.R.C.P. Pp. viii + 71. 5 Colour Plates. 40 Figures. 42s. net. London: William Heinemann: Medical Books Ltd. 1957.

Contents: Introduction. I. History of Cytodiagnosis of Serous Fluids. II. The Cells of Effusions. Nomenclature and Descriptions. III. Non-malignant Effusions: Transudates, Acute Inflammation, Tuberculous Effusions, Pleural and Peritoneal Eosinophilia. IV. Leukaemia and Reticuloses. V. Malignant Effusions. VI. Malignant Cells. Description of Types. *Appendix I.* Recommended Techniques for Cytological Examination of Fluids. *Appendix II.* Reliability of Cytological Diagnosis of Cancer; Author's Series. References. Plates. Index.

This brief little work embodies the microscopic findings from 636 cases in which 1,050 specimens of pleural, peritoneal or pericardial fluid were examined. Dried smears of these fluids were stained either by the little-used May-Grunwald-Giemsa method or by other Romanowsky stains.

While little new emerges from this work, the reader will find the information in a concise and easily assimilable form. The morphologist will be disappointed in the descriptions of malignant cells; these are skimpy and inadequate. However, this deficiency is offset by an abundance of good coloured drawings and photographs illustrating the various cell types.

The chief value of this book lies in the description and consideration of cellular patterns as seen in the various disease states, and as such the book will be of value to clinicians who require information on the interpretation of the laboratory findings of serous effusions.

C.J.U.

CHRONIC BRONCHITIS SURVEYED

Chronic Bronchitis in Newcastle-upon-Tyne. By A. G. Ogilvie, M.D. (Dunelm), F.R.C.P. (Lond.) and D. J. Newell, M.A. (Cantab.). Pp. vii + 115. Figure 6. 15s. net + 9d. postage abroad. Edinburgh and London: E. & S. Livingstone Ltd. 1957.

Contents: I. Introduction. II. Pathology and Pathogenesis. III. Definition and Recognition. IV. Newcastle-upon-Tyne. V. Preparation and Organization. VI. The Conduct of the Survey. VII. The Prevalence of Bronchitis. VIII. Clinical Indications. IX. Domestic Care and Smoking. X. Bronchitis and Housing Conditions. XI. Bronchitis and Occupational History. XII. Discussion. Summary. Conclusions. References. Appendices.

This book is an example of a cooperative endeavour between health visitors of the local authority and doctors to survey the occurrence of chronic bronchitis in Newcastle-upon-Tyne.

The survey is taken over a period of 19 months in an industrial town which is situated on the banks of the Tyne, and roughly divided into a Northern area further away from the bank of the river than the Eastern and the Western sections which are relatively more crowded, damp and polluted.

Recognizing the difficulty of definition, the authors discuss the

criteria on which they have based the acceptance of the 464 bronchitics and 485 non-bronchitic controls included in the survey—males and females over the age of 30 years—and, including in their definition both early cases in which the course is reversible and capable of healing, and the severe forms where the condition of obliterative bronchiolitis produces shortness of breath and chronicity, conclude that about one-third of cases pass on to the more serious phase, and produce the astoundingly high prevalence rate of 36% for men and 17% for women.

They confirm that infection is the dominating factor in chronic bronchitis, but that it is maintained and aggravated by environmental agents, the most important of which seem to be cigarette smoking, atmospheric pollution, dust, draughts and extremes of temperature at work, the elimination of which might lead to arrest or reversibility of the disease.

This book is of special interest to the chest physician and the industrial and the public-health medical officer. In the detailed and tabulated account of the methods used to check on histories and diagnoses, and in the assessment of housing, overcrowding and employment where these are continually changing in any one person's life, it sets an example for similar surveys and research which might lead to the prevention and earlier treatment of a disease which is not only of importance as a cause of death but perhaps the greatest cause of absenteeism in industry.

R.L.T.

YEAR BOOK OF UROLOGY

Year Book of Urology—1956-1957 *Series*. Edited by William Wallace Scott, M.D., Ph.D. Pp. 382. 87 Figures. $6.75. Chicago: Year Book Publishers, Inc. 1957.

Contents: Publisher's Note. *Studies on the Prostate. General Considerations.* Urologic Training. Examination of the Urine. Infections, Including Gonorrhea. Calculi. Urography, Instruments and Appliances. *The Kidney.* Anomalies. Tumors. Trauma. Renal Failure. Nephritis, Nephrosis and Pyelonephritis. Hypertension. Physiology. Transplantation. Hydronephrosis. Surgical Technic. Miscellaneous. *The Adrenals.* Adrogential Syndrome. Cushing's Syndrome and Cortical Tumors. Medullary Tumors. Adrenalectomy for Hypertension and Cancer. *The Ureter.* Ureterointestinal Anaestomosis. Substitute Ureter. Miscellaneous. *The Bladder.* Tumors. Micturition. Surgical Technic. Miscellaneous. *The Prostate.* Prostatitis. Prostatectomy. Carcinoma. Miscellaneous. *The Genitalia.* Penis. Urethra. Epispadias and Hypospadias. Testis Tumors. Scrotal Swellings. Cryptorchism. Fertility and Sterility. Miscellaneous.

Dr. W. W. Scott, editor of this Year Book of Urology, is steadily maintaining the high standard he set when he took over in 1950. The volume contains all the freshness and vitality one has come to expect.

This is one of the large Year Book family, which give the reader an abridged survey of the last year's literature in a particular speciality. These series are becoming increasingly popular and to be in good company one must become a subscriber.

In these busy and harried times when we all find we have to work longer hours to meet our commitments we are hard put to it to find the leisure time for reading. The Year Book not only reads for us but abstracts and collates, so that the material is condensed, sorted and pigeon-holed, and the compact little book serves as refresher, reference pocket library and a great source of information. The editor and his staff are to be congratulated in the careful and thorough study they have put into the making of this book. As in previous years one is conscious throughout of the watchful censorship of the editor, which is reflected in the pithy footnotes to many of the extracts. Medical publications are as voluminous as ever and considerably exceed what is really worth recording; and the editor's help in sorting the wheat from the chaff is thus all the more worthy of praise.

The Year Book this year comprises 382 pages, which include a full and comprehensive index. Its usual excellence, like a good vintage wine, is its main recommendation.

P.J.M.R.

CLINICAL PROCTOLOGY

Essentials of Clinical Proctology. Third Edition. By Manuel G. Spiesman, M.D., B.S., LL.D., F.I.C.P. and Louis Malow, M.D., B.S., F.A.C.S. Pp. viii + 316. 129 Figures. $8.75. New York and London: Grune & Stratton, Inc. 1957.

Contents: Preface. 1. Embryology and Applied Anatomy of the Anorectum. 2. Congenital Malformations and Pediatric Proctology. 3. Differential Diagnosis of Anorectal Conditions. 4. Proctoscopy and Sigmoidoscopy; Examination and Instrumentation. 5. Anesthesia for Anorectal Operations. 6. Preoperative and Postoperative Care in Anorectal Surgery. 7. Postoperative Complications in Anorectal Surgery. 8. Cryptitis and Papillitis. 9. Pectan Band, Pectenosis, and Pectenotomy. 10. Fissure Pentad (Fissure in Ano). 11. Abscess of the Anorectum. 12. Anorectal Fistula. 13. Hidradenitis Suppurativa (Pyoderma). 14. Hemorrhoids. 15. Injection Treatment of Hemorrhoids. 16. Prolapse and Procidentia. 17. Anal Stenosis. 18. Anal Incontinence. 19. Pruritus Ani. 20. Diarrhea: Functional and Organic. 21. Chronic Amebiasis and Amebic Dysentry. 22. Ulcerative Colitis. 23. Proctitis and Sigmoiditis: Irritable Colon (Mucous Colitis); Bacillary Dysentery. 24. Tuberculosis of the Anorectum and Colon. 25. Factitial Proctitis. 26. Venereal Diseases of the Anorectum. 27. Melanosis Coli. 28. Benign and Rare Tumors (Other than Polyps). 29. Polyps (Benign and Malignant). 30. Malignant Tumors. 31. Fecal Impaction. 32. Coccygodynia and Proctalgia Fugax. 33. Pilonidal Cysts and Sinuses. 34. Constipation. 35. Foreign Bodies and Injuries. 36. Stool Analysis. *Appendix:* Authors' Treatment Drawer; Solutions and Diets in Proctologic Work; Intestinal Parasites. *Bibliography. Index.*

The 3rd edition of this book has been completely revised and the authors have added chapters on the injection treatment of haemorrhoids, paediatric proctology (where the subject of congenital megacolon is only briefly dealt with), ulcerative colitis, hydradentis suppurativa, pruritis ani, amoebiasis, the classification of rectal polypi, and sigmoidoscopy.

The authors to to great lengths to justify the idea of the 'pecten band, pectenosis and pectenotomy'—they follow the writings of W. E. Miles and A. L. Abel in detail. They believe and attempt to prove that it is uncommon to find an anal fissure without the pecten band, and that the pecten band is *not* a fibrosis of any sphincter muscle but a pathological condition initiated by chronic passive congestion and inflammation and not found in the newborn or in the rectal mucosa of normal adults. They therefore advocate incising the pecten band in cases of anal fissure—but not the internal or external sphincter as some would have us believe. What impresses me is not so much the fervent belief in the pecten band, but the acute difference of opinion expressed by experts in the art of proctology. These divergent views come from surgeons who have many years expert experience—they differ, they treat and the patients get better. When shall we know the truth?—or does it matter?

The authors make no attempt to describe major surgical operations, e.g. abdomino-perineal resection, but rather stress the basic clinical and practical approach to diagnosis and treatment of common anal conditions.

The book is full of do-s and don't-s, and the don't-s on sigmoidoscopy and the injection of haemorrhoids are excellent. There are long lists of prescriptions and details from the author's 'treatment drawer', which will surely be of value to all.

This book is strongly recommended to general practitioners and surgeons alike.

P.H.

CORRESPONDENCE : BRIEWERUBRIEK

STATEMENT BY THE EDITOR

In regard to a letter published in the *South African Medical Journal* of 7 September 1957, over the signature of C. F. Krige, the *Editor* of the *South African Medical Journal*, with the approval of Federal Council, wishes to state that the *South African Medical Journal* dissociates itself entirely from the sentiments and views expressed in the letter, and tenders his apology to the President and Council of the Southern Transvaal Branch, and to any other members particularly referred to by implication or imputation who may have suffered embarrassment as a result of such publication.